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(54) Title: HUMAN COLON CANCER ASSOCIATED GENE SEQUENCES AND POLYPEPTIDES

(57) Abstract

This invention relates to newly identified colon or colon cancer related polynucleotides and the polypeptides encoded by these polynucleotides herein collectively known as "colon cancer antigens", and to the complete gene sequences associated therewith and to the expression products thereof, as well as the use of such colon cancer antigens for detection, prevention and treatment of disorders of the colon, particularly the presence of colon cancer. This invention relates to the colon cancer antigens as well as vectors, host cells, antibodies directed to colon cancer antigens and recombinant and synthetic methods for producing the same. Also provided are diagnostic methods for diagnosing and treating, preventing and/or prognosing disorders related to the colon, including colon cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of colon cancer antigens of the invention. The present invention further relates to methods and/or compositions for inhibiting the production and/or function of the polypeptides of the present invention.

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Human Colon Cancer Associated Gene Sequences and Polypeptides

Field of the Invention

This invention relates to newly identified colon or colon cancer related polynucleotides and the polypeptides encoded by these polynucleotides herein collectively known as "colon cancer antigens," and to the complete gene sequences associated therewith and to the expression products thereof, as well as the use of such colon cancer antigens for detection, prevention and treatment of disorders of the colon, particularly the presence of colon cancer. This invention relates to the colon cancer antigens as well as vectors, host cells, antibodies directed to colon cancer antigens and recombinant and synthetic methods for producing the same. Also provided are diagnostic methods for diagnosing and treating, preventing and/or prognosing disorders related to the colon, including colon cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of colon cancer antigens of the invention. The present invention further relates to methods and/or compositions for inhibiting the production and/or function of the polypeptides of the present invention.

Background of the Invention

Colorectal cancers are among the most common cancers in men and women in the U.S. and are one of the leading causes of death. Other than surgical resection no other systemic or adjuvant therapy is available. Vogelstein and colleagues have described the sequence of genetic events that appear to be associated with the multistep process of colon cancer development in humans (Trends Genet 9(4):138-41 (1993)). An understanding of the molecular genetics of carcinogenesis, however, has not led to preventative or therapeutic measures. It can be expected that advances in molecular genetics will lead to better risk assessment and early diagnosis but colorectal cancers will remain a deadly disease for a majority of patients due to the

lack of an adjuvant therapy. Adjuvant or systemic treatments are likely to arise from a better understanding of the autocrine factors responsible for the continued proliferation of cancer cells.

Colorectal carcinoma is a malignant neoplastic disease. There is a high incidence of colorectal carcinoma in the Western world, particularly in the United States. Tumors of this type often metastasize through lymphatic and vascular channels. Many patients with colorectal carcinoma eventually die from this disease. In fact, it is estimated that 62,000 persons in the United States alone die of colorectal carcinoma annually.

At the present time the only systemic treatment available for colon cancer is chemotherapy. However, chemotherapy has not proven to be very effective for the treatment of colon cancers for several reasons, the most important of which is the fact that colon cancers express high levels of the MDR gene (that codes for multi-drug resistance gene products). The MDR gene products actively transport the toxic substances out of the cell before the chemotherapeutic agents can damage the DNA machinery of the cell. These toxic substances harm the normal cell populations more than they harm the colon cancer cells for the above reasons.

There is no effective systemic treatment for treating colon cancers other than surgically removing the cancers. In the case of several other cancers, including breast cancers, the knowledge of growth promoting factors (such as EGF, estradiol, IGF-11) that appear to be expressed or effect the growth of the cancer cells, has been translated for treatment purposes. But in the case of colon cancers this knowledge has not been applied and therefore the treatment outcome for colon cancers remains bleak.

There is a need, therefore, for identification and characterization of such factors that modulate activation and differentiation of colon cells, both normally and in disease states. In particular, there is a need to isolate and characterize additional molecules that mediate apoptosis, DNA repair, tumor-mediated angiogenesis, genetic imprinting, immune responses to tumors and tumor antigens and, among other things, that can play a role in detecting, preventing, ameliorating or correcting dysfunctions or diseases of the colon.

Summary of the Invention

The present invention includes isolated nucleic acid molecules comprising, or alternatively, consisting of, a colon and/or colon cancer associated polynucleotide sequence disclosed in the sequence listing (as SEQ ID Nos:1 to 773) and/or contained in a human cDNA clone described in Tables 1, 2 and 5 and deposited with the American Type Culture Collection ("ATCC"). Fragments, variant, and derivatives of these nucleic acid molecules are also encompassed by the invention. The present invention also includes isolated nucleic acid molecules comprising, or alternatively consisting of, a polynucleotide encoding a colon or colon cancer polypeptide. The present invention further includes colon and/or colon cancer polypeptides encoded by these polynucleotides. Further provided for are amino acid sequences comprising, or alternatively consisting of, colon and/or colon cancer polypeptides as disclosed in the sequence listing (as SEQ ID Nos: 774 to 1546) and/or encoded by a human cDNA clone described in Tables 1, 2 and 5 and deposited with the ATCC. Antibodies that bind these polypeptides are also encompassed by the invention. Polypeptide fragments, variants, and derivatives of these amino acid sequences are also encompassed by the invention, as are polynucleotides encoding these polypeptides and antibodies that bind these polypeptides. Also provided are diagnostic methods for diagnosing and treating, preventing, and/or prognosing disorders related to the colon, including colon cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of colon cancer antigens of the invention.

Detailed Description

Tables

Table 1 summarizes some of the colon cancer antigens encompassed by the invention (including contig sequences (SEQ ID NO:X) and the cDNA clone related to the contig sequence) and further summarizes certain characteristics of the colon cancer polynucleotides and the polypeptides encoded thereby. The first column shows the "SEQ ID NO:" for each of the 773 colon cancer antigen polynucleotide sequences of the invention. The second column provides a unique "Sequence/Contig ID"

identification for each colon and/or colon cancer associated sequence. The third column, "Gene Name," and the fourth column, "Overlap," provide a putative identification of the gene based on the sequence similarity of its translation product to an amino acid sequence found in a publicly accessible gene database and the database accession no. for the database sequence having similarity, respectively. The fifth and sixth columns provide the location (nucleotide position nos. within the contig), "Start" and "End", in the polynucleotide sequence "SEQ ID NO:X" that delineate the preferred ORF shown in the sequence listing as SEQ ID NO:Y. The seventh and eighth columns provide the "% Identity" (percent identity) and "% Similarity" (percent similarity), respectively, observed between the aligned sequence segments of the translation product of SEQ ID NO:X and the database sequence. The ninth column provides a unique "Clone ID" for a cDNA clone related to each contig sequence.

Table 2 summarizes ATCC Deposits, Deposit dates, and ATCC designation numbers of deposits made with the ATCC in connection with the present application.

Table 3 indicates public ESTs, of which at least one, two, three, four, five, ten, fifteen or more of any one or more of these public EST sequences are optionally excluded from certain embodiments of the invention.

Table 4 lists residues comprising antigenic epitopes of antigenic epitope-bearing fragments present in most of the colon or colon cancer associated polynucleotides described in Table 1 as predicted by the inventors using the algorithm of Jameson and Wolf, (1988) Comp. Appl. Biosci. 4:181-186. The Jameson-Wolf antigenic analysis was performed using the computer program PROTEAN (Version 3.11 for the Power MacIntosh, DNASTAR, Inc., 1228 South Park Street Madison, WI). Colon and colon cancer associated polypeptides shown in Table 1 may possess one or more antigenic epitopes comprising residues described in Table 4. It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly. The residues and locations shown in Table 4 correspond to the amino acid sequences for most colon and colon cancer associated polypeptide sequence shown in the Sequence Listing.

Table 5 shows the cDNA libraries sequenced, and ATCC designation numbers and vector information relating to these cDNA libraries.

Definitions

The following definitions are provided to facilitate understanding of certain terms used throughout this specification.

In the present invention, "isolated" refers to material removed from its original environment (e.g., the natural environment if it is naturally occurring), and thus is altered "by the hand of man" from its natural state. For example, an isolated polynucleotide could be part of a vector or a composition of matter, or could be contained within a cell, and still be "isolated" because that vector, composition of matter, or particular cell is not the original environment of the polynucleotide. The term "isolated" does not refer to genomic or cDNA libraries, whole cell total or mRNA preparations, genomic DNA preparations (including those separated by electrophoresis and transferred onto blots), sheared whole cell genomic DNA preparations or other compositions where the art demonstrates no distinguishing features of the polynucleotide/sequences of the present invention.

As used herein, a "polynucleotide" refers to a molecule having a nucleic acid sequence contained in SEQ ID NO:X (as described in column 1 of Table 1) or the related cDNA clone (as described in column 9 of Table 1 and contained within a library deposited with the ATCC). For example, the polynucleotide can contain the nucleotide sequence of the full length cDNA sequence, including the 5' and 3' untranslated sequences, the coding region, as well as fragments, epitopes, domains, and variants of the nucleic acid sequence. Moreover, as used herein, a "polypeptide" refers to a molecule having an amino acid sequence encoded by a polynucleotide of the invention as broadly defined (obviously excluding poly-Phenylalanine or poly-Lysine peptide sequences which result from translation of a polyA tail of a sequence corresponding to a cDNA).

In the present invention, "SEQ ID NO:X" was often generated by overlapping sequences contained in multiple clones (contig analysis). A representative clone containing all or most of the sequence for SEQ ID NO:X is deposited at Human Genome Sciences, Inc. (HGS) in a catalogued and archived library. As shown in column 9 of Table 1, each clone is identified by a cDNA Clone ID. Each Clone ID is unique to an individual clone and the Clone ID is all the information needed to

retrieve a given clone from the HGS library. In addition to the individual cDNA clone deposits, most of the cDNA libraries from which the clones were derived were deposited at the American Type Culture Collection (hereinafter "ATCC"). Table 5 provides a list of the deposited cDNA libraries. One can use the Clone ID to determine the library source by reference to Tables 2 and 5. Table 5 lists the deposited cDNA libraries by name and links each library to an ATCC Deposit. Library names contain four characters, for example, "HTWE." The name of a cDNA clone ("Clone ID") isolated from that library begins with the same four characters, for example "HTWEP07". As mentioned below, Table 1 correlates the Clone ID names with SEQ ID NOs. Thus, starting with a SEQ ID NO, one can use Tables 1, 2 and 5 to determine the corresponding Clone ID, from which library it came and in which ATCC deposit the library is contained. Furthermore, it is possible to retrieve a given cDNA clone from the source library by techniques known in the art and described elsewhere herein. The ATCC is located at 10801 University Boulevard, Manassas, Virginia 20110-2209, USA. The ATCC deposits were made persuant to the terms of the Budapest Treaty on the international recognition of the deposit of microorganisms for the purposes of patent procedure.

A "polynucleotide" of the present invention also includes those polynucleotides capable of hybridizing, under stringent hybridization conditions, to sequences contained in SEQ ID NO:X, or the complement thereof (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments described herein), and/or sequences contained in the related cDNA clone within a library deposited with the ATCC. "Stringent hybridization conditions" refers to an overnight incubation at 42 degree C in a solution comprising 50% formamide, 5x SSC (750 mM NaCl, 75 mM trisodium citrate), 50 mM sodium phosphate (pH 7.6), 5x Denhardt's solution, 10% dextran sulfate, and 20 μg/ml denatured, sheared salmon sperm DNA, followed by washing the filters in 0.1x SSC at about 65 degree C.

Also included within "polynucleotides" of the present invention are nucleic acid molecules that hybridize to the polynucleotides of the present invention at lower stringency hybridization conditions. Changes in the stringency of hybridization and signal detection are primarily accomplished through the manipulation of formamide concentration (lower percentages of formamide result in lowered stringency); salt

conditions, or temperature. For example, lower stringency conditions include an overnight incubation at 37 degree C in a solution comprising 6X SSPE (20X SSPE = 3M NaCl; 0.2M NaH_2PO_4; 0.02M EDTA, pH 7.4), 0.5% SDS, 30% formamide, 100 ug/ml salmon sperm blocking DNA; followed by washes at 50 degree C with 1XSSPE, 0.1% SDS. In addition, to achieve even lower stringency, washes performed following stringent hybridization can be done at higher salt concentrations (e.g. 5X SSC).

Note that variations in the above conditions may be accomplished through the inclusion and/or substitution of alternate blocking reagents used to suppress background in hybridization experiments. Typical blocking reagents include Denhardt's reagent, BLOTTO, heparin, denatured salmon sperm DNA, and commercially available proprietary formulations. The inclusion of specific blocking reagents may require modification of the hybridization conditions described above, due to problems with compatibility.

Of course, a polynucleotide which hybridizes only to polyA+ sequences (such as any 3' terminal polyA+ tract of a cDNA shown in the sequence listing), or to a complementary stretch of T (or U) residues, would not be included in the definition of "polynucleotide," since such a polynucleotide would hybridize to any nucleic acid molecule containing a poly (A) stretch or the complement thereof (e.g., practically any double-stranded cDNA clone generated using oligo dT as a primer).

The polynucleotides of the present invention can be composed of any polyribonucleotide or polydeoxribonucleotide, which may be unmodified RNA or DNA or modified RNA or DNA. For example, polynucleotides can be composed of single- and double-stranded DNA, DNA that is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and double-stranded regions, hybrid molecules comprising DNA and RNA that may be single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, the polynucleotide can be composed of triple-stranded regions comprising RNA or DNA or both RNA and DNA. A polynucleotide may also contain one or more modified bases or DNA or RNA backbones modified for stability or for other reasons. "Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of

modifications can be made to DNA and RNA: thus, "polynucleotide" embraces chemically, enzymatically, or metabolically modified forms.

In specific embodiments, the polynucleotides of the invention are at least 15, at least 30, at least 50, at least 100, at least 125, at least 500, or at least 1000 continuous nucleotides but are less than or equal to 300 kb. 200 kb, 100 kb, 50 kb, 15 kb, 10 kb, 7.5kb, 5 kb, 2.5 kb. 2.0 kb. or 1 kb, in length. In a further embodiment, polynucleotides of the invention comprise a portion of the coding sequences, as disclosed herein, but do not comprise all or a portion of any intron. In another embodiment. the polynucleotides comprising coding sequences do not contain coding sequences of a genomic flanking gene (i.e., 5' or 3' to the gene of interest in the genome). In other embodiments. the polynucleotides of the invention do not contain the coding sequence of more than 1000, 500, 250, 100, 50, 25, 20, 15, 10, 5, 4, 3, 2, or 1 genomic flanking gene(s).

"SEQ ID NO:X" refers to a colon cancer antigen polynucleotide sequence described in Table 1. SEQ ID NO:X is identified by an integer specified in column 1 of Table 1. The polypeptide sequence SEQ ID NO:Y is a translated open reading frame (ORF) encoded by polynucleotide SEQ ID NO:X. There are 773 colon cancer antigen polynucleotide sequences described in Table 1 and shown in the sequence listing (SEQ ID NO:1 through SEQ ID NO:773). Likewise there are 773 polypeptide sequences shown in the sequence listing, one polypeptide sequence for each of the polynucleotide sequences (SEQ ID NO:774 through SEQ ID NO:1546). The polynucleotide sequences are shown in the sequence listing immediately followed by all of the polypeptide sequences. Thus, a polypeptide sequence corresponding to polynucleotide sequence SEQ ID NO:1 is the first polypeptide sequence shown in the sequence listing. The second polypeptide sequence corresponds to the polynucleotide sequence shown as SEQ ID NO:2, and so on. In otherwords, since there are 773 polynucleotide sequences, for any polynucleotide sequence SEQ ID NO:X, a corresponding polypeptide SEQ ID NO:Y can be determined by the formula X + 773 = Y. In addition, any of the unique "Sequence/Contig ID" defined in column two of Table 1. can be linked to the corresponding polypeptide SEQ ID NO:Y by reference to Table 4.

The polypeptides of the present invention can be composed of amino acids joined to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres. and may contain amino acids other than the 20 gene-encoded amino acids. The polypeptides may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. Such modifications are well described in basic texts and in more detailed monographs, as well as in a voluminous research literature. Modifications can occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphotidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine, formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth Enzymol 182:626-646 (1990); Rattan et al., Ann NY Acad Sci 663:48-62 (1992).)

The colon and colon cancer polypeptides of the invention can be prepared in any suitable manner. Such polypeptides include isolated naturally occurring polypeptides, recombinantly produced polypeptides, synthetically produced

polypeptides, or polypeptides produced by a combination of these methods. Means for preparing such polypeptides are well understood in the art.

The polypeptides may be in the form of the secreted protein, including the mature form, or may be a part of a larger protein, such as a fusion protein (see below). It is often advantageous to include an additional amino acid sequence which contains secretory or leader sequences, pro-sequences, sequences which aid in purification, such as multiple histidine residues, or an additional sequence for stability during recombinant production.

The colon and colon cancer polypeptides of the present invention are preferably provided in an isolated form, and preferably are substantially purified. A recombinantly produced version of a polypeptide, including the secreted polypeptide, can be substantially purified using techniques described herein or otherwise known in the art, such as, for example, by the one-step method described in Smith and Johnson, Gene 67:31-40 (1988). Polypeptides of the invention also can be purified from natural, synthetic or recombinant sources using techniques described herein or otherwise known in the art, such as, for example, antibodies of the invention raised against the polypeptides of the present invention in methods which are well known in the art.

By a polypeptide demonstrating a "functional activity" is meant, a polypeptide capable of displaying one or more known functional activities associated with a full-length (complete) protein of the invention. Such functional activities include, but are not limited to, biological activity, antigenicity [ability to bind (or compete with a polypeptide for binding) to an anti-polypeptide antibody], immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide.

"A polypeptide having functional activity" refers to polypeptides exhibiting activity similar, but not necessarily identical to, an activity of a polypeptide of the present invention, including mature forms, as measured in a particular assay, such as, for example, a biological assay, with or without dose dependency. In the case where dose dependency does exist, it need not be identical to that of the polypeptide, but rather substantially similar to the dose-dependence in a given activity as compared to

the polypeptide of the present invention (i.e., the candidate polypeptide will exhibit greater activity or not more than about 25-fold less and, preferably, not more than about tenfold less activity, and most preferably, not more than about three-fold less activity relative to the polypeptide of the present invention).

The functional activity of the colon cancer antigen polypeptides, and fragments. variants derivatives. and analogs thereof, can be assayed by various methods.

For example. in one embodiment where one is assaying for the ability to bind or compete with full-length polypeptide of the present invention for binding to an antibody to the full length polypeptide antibody, various immunoassays known in the art can be used, including but not limited to, competitive and non-competitive assay systems using techniques such as radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoradiometric assays, gel diffusion precipitation reactions, immunodiffusion assays, in situ immunoassays (using colloidal gold, enzyme or radioisotope labels, for example), western blots, precipitation reactions, agglutination assays (e.g., gel agglutination assays, hemagglutination assays), complement fixation assays, immunofluorescence assays, protein A assays, and immunoelectrophoresis assays, etc. In one embodiment. antibody binding is detected by detecting a label on the primary antibody. In another embodiment. the primary antibody is detected by detecting binding of a secondary antibody or reagent to the primary antibody. In a further embodiment, the secondary antibody is labeled. Many means are known in the art for detecting binding in an immunoassay and are within the scope of the present invention.

In another embodiment, where a ligand is identified, or the ability of a polypeptide fragment, variant or derivative of the invention to multimerize is being evaluated, binding can be assayed, e.g., by means well-known in the art, such as, for example, reducing and non-reducing gel chromatography, protein affinity chromatography, and affinity blotting. See generally, Phizicky, E., et al., Microbiol. Rev. 59:94-123 (1995). In another embodiment, physiological correlates polypeptide of the present invention binding to its substrates (signal transduction) can be assayed.

In addition, assays described herein (see Examples) and otherwise known in the art may routinely be applied to measure the ability of polypeptides of the present

invention and fragments. variants derivatives and analogs thereof to elicit polypeptide related biological activity (either in vitro or in vivo). Other methods will be known to the skilled artisan and are within the scope of the invention.

Colon and Colon Cancer Associated Polvnucleotides and Polvpeptides of the Invention

It has been discovered herein that the polynucleotides described in Table 1 are expressed at significantly enhanced levels in human colon and/or colon cancer tissues. Accordingly, such polynucleotides, polypeptides encoded by such polynucleotides. and antibodies specific for such polypeptides find use in the prediction, diagnosis. prevention and treatment of colon related disorders. including colon cancer as more fully described below.

Table 1 summarizes some of the polynucleotides encompassed by the invention (including contig sequences (SEQ ID NO:X) and the related cDNA clones) and further summarizes certain characteristics of these colon and/or colon cancer associated polynucleotides and the polypeptides encoded thereby.

Table 1

Seq ID No.	Sequence/ Contig ID	Gene Name	Overlap	HGS Nucleotide Start	HGS Nucleotide End	% Identity	% Similarity	Clone ID
1	500802			2	304			HGBA183
2	531091			2	292			HUKDY21
3	553147	Immunoglobulin kappa light chain variable region L25 [Homo sapiens] >pir|S41816|S41816 Ig kappa chain V region L25 - human Length = 119	gi|415381	3	440	73	86	HCASG85
4	558860	(AB008790) Grb7V protein [Homo sapiens] >sp|D1030000|D1030000 GRB7V PROTEIN. >gi|1526535 Grb7 protein [Homo sapiens] {SUB 130-343} Length = 447	gnl|PID|d1030000	33	635	97	98	HCEGY28
5	561730	(AF039700) antigen NY-CO-38 [Homo sapiens] >sp|G3170200|G3170200 ANTIGEN NY-CO-38. >gi|3170198 (AF039699) antigen NY-CO-37 [Homo sapiens] {SUB 1-403} Length = 652	gi|3170200	34	393	98	98	HSDFA48
6	585938	MDA-7 [Homo sapiens] >sp|Q13007|MDA7_HUMAN MDA-7 PROTEIN PRECURSOR (MELANOMA DIFFERENTIATION ASSOCIATED PROTEIN 7). Length = 206	gi|1141751	206	538	81	81	HMQBR31
7	587785	disintegrin-protease [Homo sapiens] >sp|O15204|O15204 DISINTEGRIN-PROTEASE. Length = 470	gnl|PID|e332729	2	331	100	100	HOSBO86

8	588916	Human apoC-II gene for preproapolipoprotein C-II [Homo sapiens] >gi|757915 apoCII protein [Homo sapiens] >gi|178836 apolipoprotein C-II [Homo sapiens] >pir|A24238|LPHUC2 apolipoprotein C-II precursor - human	gi|296636	5	376	100	100	HLDQU56
9	613825			3	260			HMSHB03
10	639090			254	559			HCRME22
11	651644			63	194			HCFBO73
12	659544			109	249			HJMBU15
13	659739	KHS1 [Homo sapiens] >sp|G1857331|G1857331 KHS1. Length = 846	gi|1857331	238	1140	94	94	HSYAM68
14	661057	protein kinase Dyrk2 [Homo sapiens] >sp|Q92630|Q92630 PROTEIN KINASE DYRK2 (PROTEIN KINASE. DYRK2). >gnl|PID|e280618 Dyrk2 [Homo sapiens] {SUB 320-528} Length = 528	gnl|PID|e321513	3	425	100	100	HCDBX83
15	661313			894	1118			HHEMN11
16	666316			193	369			HCDCH84
17	669229			430	762			HOHDD51
18	670471	(AJ003061) most expressed alternative spliced form [Homo sapiens] >sp|O60852|O60852 PROTEIN ENCODED BY SACCHAROMYCES CEREVISIAE SPC98 HOMOLOGUE. Length = 907	gnl|PID|e1293754	203	937	92	93	HAGGX21
19	676611			207	530			HCE5C73
20	691240			2	385			HISAN54

21	702977	26-kDa cell surface protein TAPA-1 [Homo sapiens] >pir|A35649|A35649 cell surface protein TAPA-1 - human >sp|P18582|CD81_HUMAN CD81 ANTIGEN (26 KD CELL SURFACE PROTEIN TAPA-1). Length = 236	gi|338678	34	819	80	80	HGCMV09
22	709517			344	478			HWLJX38
23	714730	(AF062476) retinoic acid-responsive protein; STRA6 [Mus musculus] >sp|O70491|O70491 RETINOIC ACID-RESPONSIVE PROTEIN. Length = 670	gi|3126975	1	534	75	88	HCRND05
24	714834			1	657			HAPTL75
25	715016			1	411			HCEOQ15
26	719584	(AF076856) small espin [Rattus norvegicus] >sp|G3818569|G3818569 SMALL ESPIN. Length = 253	gi|3818569	530	886	62	64	HWLFA47
27	724637	muskelin [Mus musculus] >sp|O89050|O89050 MUSKELIN. Length = 735	gi|3493462	1	444	92	95	HUSXP30
28	728392	(AB015318) gamma2-adaptin [Homo sapiens] >sp|O75843|O75843 GAMMA2-ADAPTIN. Length = 785	gnl|PID|d1034356	160	801	100	100	HBJIG25
29	738716			137	289			HCRMQ71
30	739056	similar to ADP-ribosylation factor;	gnl|PID|e1350748	2	502	87	97	HSDZB27
31	739143	(AF054179) II beta 58 homolog [Homo sapiens] >sp|O75436|O75436 II BETA 58 HOMOLOG. Length = 327	gi|3342000	1	1083	100	100	HKABV36
32	742329			2	277			HSRDE23
33	742557			2	814			HWHGD94
34	745481			1229	1396			HPMFL67
35	746035			414	959			HCHCJ20
36	753731			1	357			HPTTL69

37	754383			3	434			HBGMG69
38	756749			3	464			HMEJZ19
39	757980			365	622			HETIS94
40	764818			3	1700			HCE4A59
41	765140			3	200			HRODG74
42	766893			178	414			HCEOS64
43	771338	(AF034745) LNXp80 [Mus musculus] >sp|O70263|O70263 LIGAND OF NUMB-PROTEIN X (LNXP80). Length = 728	gi|3041879	1	681	91	96	HCQDR53
44	771412			2	601			HCHAG61
45	772226	(AF011794) cell cycle progression restoration 8 protein [Homo sapiens] >sp|O14712|O14712 CELL CYCLE PROGRESSION RESTORATION 8 PROTEIN. Length = 375	gi|2352906	3	257	100	100	HMVCR68
46	773057			36	236			HE2BE05
47	773173			514	693			HTEPE82
48	780154			44	820			HCEZW82
49	780768			1176	1352			HPLBS64
50	780779	similar to G9a gene. [Homo sapiens] >sp|Q15047|Q15047 MRNA (KIAA0067) FOR ORF (RELATED TO G9A GENE), COMPLETE CDS (KIAA0067). Length = 1291	gnl|PID|d1007261	134	658	86	86	HAMFL51
51	782394			1068	1337			HDLBC18
52	783160	(AF026977) microsomal glutathione S-transferase 3 [Homo sapiens] >sp|O14880|O14880 MICROSOMAL GLUTATHIONE S-TRANSFERASE 3. Length = 152	gi|2583081	25	492	100	100	HE9PG68
53	783506			49	825			HODCW56

54	784446			19	282			HBJFL85
55	784832			134	751			HCGMI84
56	786813			114	347			HE2OI55
57	792139	(AB002086) p47 [Rattus norvegicus] >gnl|PID|e294068 XY40 protein [Rattus norvegicus] >sp|O35987|O35987 P47, COMPLETE CDS. Length = 370	gnl|PID|d1022509	32	334	83	85	H6EEC65
58	793987			100	564			HCIAE18
59	805715			513	1226			HDPKI64
60	811111			1	438			HCEDF72
61	811113	steroidogenic acute regulatory protein [Mus musculus] >pir|A55455|A55455 steroidogenic acute regulatory protein precursor, mitochondrial - mouse Length = 284	gi|1236243	2	718	28	50	HWBEX78
62	823902	(AF028722) fetal globin inducing factor [Mus musculus] >sp|G4103857|G4103857 FETAL GLOBIN INDUCING FACTOR. Length = 238	gi|4103857	36	497	87	94	HDTBD43
63	826518	RNase 4 [Homo sapiens] >pir|I52489|I52489 ribonuclease 4 (EC 3.1.-.-) precursor - human Length = 147	gnl|PID|d1007727	1	231	100	100	HLQCQ62
64	826704			475	726			HCQBI18
65	827720			789	1076			HFICY86
66	828102			106	297			HSRFC02
67	828180	(AB013456) aquaporin 8 [Homo sapiens] >gnl|PID|d1035202 (AB013456) aquaporin 8 [Homo sapiens] >sp|D1035202|D1035202 AQUAPORIN 8. Length = 261	gnl|PID|d1035202	20	883	83	83	HWLFM26

<table>
<tr><td>68</td><td>828386</td><td>(AF093821) RRM RNA binding protein GRY-RBP [Mus musculus] >sp|O88991|O88991 RRM RNA BINDING PROTEIN GRY-RBP. Length = 625</td><td>gi|3694986</td><td>3</td><td>650</td><td>100</td><td>100</td><td>HOHAD26</td></tr>
<tr><td>69</td><td>828658</td><td>protein-tyrosine-phosphatase [Homo sapiens] >gnl|PID|d1032930 (AB013601) DUSP6 [Homo sapiens] >gnl|PID|d1035350 (AB013382) DUSP6 [Homo sapiens] >gnl|PID|d1032930 (AB013601) DUSP6 [Homo sapiens] >sp|Q16828|DUS6_HUMAN DUAL SPECIFICITY PROTEIN PHOSPHATASE 6</td><td>gnl|PID|e218263</td><td>2</td><td>568</td><td>100</td><td>100</td><td>HLHCO24</td></tr>
<tr><td>70</td><td>828919</td><td>RNA helicase [Homo sapiens] >pir|S71758|S71758 DEAD box protein MrDb, Myc-regulated - human >sp|Q92732|Q92732 RNA HELICASE. Length = 610</td><td>gnl|PID|e254454</td><td>2</td><td>661</td><td>99</td><td>100</td><td>HFOYL30</td></tr>
<tr><td>71</td><td>829572</td><td></td><td></td><td>163</td><td>411</td><td></td><td></td><td>HSVAK51</td></tr>
<tr><td>72</td><td>830138</td><td>similar to Glyoxalase [Caenorhabditis elegans] Length = 281</td><td>gnl|PID|e1344082</td><td>134</td><td>475</td><td>53</td><td>67</td><td>HYAAH90</td></tr>
<tr><td>73</td><td>830208</td><td>UbcH5B [Homo sapiens] >gi|595668 ubiquitin conjugating enzyme [Rattus norvegicus] >gi|1480742 ubiquitin conjugating enzyme [Mus musculus] >pir|S53359|S53359 ubiquitin conjugating enzyme (E217kB) - rat Length = 147</td><td>gi|1145689</td><td>2</td><td>205</td><td>92</td><td>95</td><td>HIBCN46</td></tr>
<tr><td>74</td><td>830248</td><td>A33 antigen precursor [Homo sapiens] >sp|Q99795|A33_HUMAN CELL SURFACE A33 ANTIGEN</td><td>gi|1814277</td><td>3</td><td>1097</td><td>30</td><td>39</td><td>HWLHJ13</td></tr>
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		PRECURSOR. Length = 319						
75	830275	Similar to D.melanogaster parallel sister chromatids protein [Homo sapiens] >sp|Q92549|Q92549 MYELOBLAST KIAA0261 (FRAGMENT). Length = 1287	gnl|PID|d1014081	3	647	100	100	HWLFO28
76	830286	interferon-related putative protein [Homo sapiens] >sp|Q12894|Q12894 HYPOTHETICAL 48.0 KD PROTEIN. >gi|1209022 interferon-related putative protein [Homo sapiens] {SUB 2-442} Length = 442	gi|2880033	385	1488	91	91	HWLFE46
77	830347	(AF039401) calcium-dependent chloride channel-1 [Homo sapiens] >sp|G4009460|G4009460 CALCIUM-DEPENDENT CHLORIDE CHANNEL-1. Length = 914	gi|4009460	3	656	63	76	HWLEL81
78	830348			3	911			HWHQR45
79	830364	inorganic pyrophosphatase (EC 3.6.1.1) - bovine >sp|P37980|IPYR_BOVIN INORGANIC PYROPHOSPHATASE (EC 3.6.1.1) (PYROPHOSPHATE PHOSPHO- HYDROLASE) (PPASE). Length = 289	pir|A45153|A45153	3	1022	67	85	HWLEI47
80	830394			1	951			HDPVF62
81	830398			526	627			HWBCR84

82	830412	SDF2 [Homo sapiens] >pir|JC5106|JC5106 stromal cell-derived factor 2 - human >sp|Q99470|Q99470 SDF2. Length = 211	gnl|PID|d1009953	233	928	91	92	HWHHQ57
83	830436	(AJ005821) X-like 1 protein [Homo sapiens] >sp|E1291794|E1291794 X-LIKE 1 PROTEIN. Length = 3027	gnl|PID|e1291794	83	523	65	78	HWABR83
84	830464	CLP36 [Rattus norvegicus] >pir|JC4385|JC4385 LIM protein - rat >sp|P52944|CL36_RAT LIM PROTEIN CLP36. Length = 327	gi|1020151	2	289	72	81	HUSGB72
85	830471			95	229			HUSIK51
86	830477	(AF011794) cell cycle progression restoration 8 protein [Homo sapiens] >sp|O14712|O14712 CELL CYCLE PROGRESSION RESTORATION 8 PROTEIN. Length = 375	gi|2352906	116	2389	95	96	HULAT84
87	830500	ORF YGR036c [Saccharomyces cerevisiae] >pir|S64327|S64327 probable membrane protein YGR036c - yeast (Saccharomyces cerevisiae) Length = 239	gnl|PID|e243385	185	736	38	54	HJPCP29
88	830509	(AL021813) phenylalanyl-trna synthetase alpha chain [Schizosaccharomyces pombe] >sp|O42849|O42849 PHENYLALANYL-TRNA SYNTHETASE ALPHA CHAIN. Length = 589	gnl|PID|e1250585	2	1081	40	63	HUFAU68

89	830528	hepatoma-derived growth factor [Mus musculus] >pir|JC5662|JC5662 hepatoma-derived growth factor-related protein 2 - mouse >sp|O35540|O35540 HEPATOMA-DERIVED GROWTH FACTOR, RELATED PROTEIN 2. . Length = 669	dbj||D63850_1	38	1591	78	87	HUFBF32
90	830542	mitochondrial 3-oxoacyl-CoA thiolase [Homo sapiens] >pir|S43440|S43440 3-oxoacyl-CoA thiolase - human Length = 397	gnl|PID|d1004316	324	1637	92	92	HTTDO45
91	830564			702	1343			HTPBU79
92	830611	IgM heavy chain VH1 region precursor [Homo sapiens] Length = 146	gi|2344934	1	495	78	79	HTJMB28
93	830618			655	915			HDTMI21
94	830620			452	754			HTGDM95
95	830630	mitochondrial benzodiazepine receptor [Homo sapiens] >pir|I38724|I38724 mitochondrial benzodiazepine receptor - human >gi|3411163 (AF075589) peripheral-type benzodiazepine receptor [Homo sapiens] {SUB 27-169} Length = 169	gi|529946	14	259	100	100	HTGFS43
96	830654	RNA-binding protein [Saccharomyces cerevisiae] Length = 497	gi|295631	2	1687	40	51	HSYBQ96
97	830660			122	694			HSYDW13
98	830661			555	779			HSXDG80
99	830704	pp21 [Homo sapiens] >pir|I53785|I53785 gene pp21 protein - human >sp|Q15170|Q15170 (PP21). Length = 157	gi|521207	1	609	51	76	HSUSF13
100	830765			39	236			HSKES11

101	830778	methionine aminopeptidase [Homo sapiens] >gi|687243 eIF-2-associated p67 homolog [Homo sapiens] >pir|S52112|DPHUM2 methionyl aminopeptidase (EC 3.4.11.18) 2 - human >sp|P50579|AMP2_HUMAN METHIONINE AMINOPEPTIDASE 2 (EC 3.4.11.18) (METAP 2) (PEPTIDASE M 2)	gi|903982	26	718	99	100	HSPAX18
102	830784			595	858			HSIFY77
103	830800	(AF039918) CD39L4 [Homo sapiens] >sp|O75356|O75356 CD39L4. Length = 428	gi|3335102	1	990	94	94	HHPDD94
104	830821			449	754			HAQND53
105	830849			464	868			HHEAA48
106	830903			1	525			HPJCT75
107	830913	tumor necrosis factor type 1 receptor associated protein [Homo sapiens] >pir|A55877|A55877 tumor necrosis factor type 1 receptor associated protein TRAP-1 - human	gi|687237	3	1193	99	99	HPIBH48
108	830920	microsomal glutathione S-transferase 2 [Homo sapiens] >sp|Q99735|GST2_HUMAN MICROSOMAL GLUTATHIONE S-TRANSFERASE II (EC 2.5.1.18) (MICROSOMAL GST- II). Length = 147	gi|1747521	90	650	87	87	HPHAA84
109	830938	peroxisome proliferator activated receptor gamma 2 [Homo sapiens] >gi|1711117 ligand activated transcription factor PPARgamma2 [Homo sapiens]	gi|1432177	227	610	98	98	HONAE45

110	830980	beta COP [Rattus norvegicus] >pir|S13520|S13520 beta-COP protein - rat >sp|P23514|COPB_RAT COATOMER BETA SUBUNIT (BETA-COAT PROTEIN) (BETA-COP). >pir|S13636|S13636 110K protein - rabbit {SUB 451-500} Length = 953	gi|55819	47	289	95	98	HCESG53
111	831014	(AF016687) similar to alpha-actinin [Caenorhabditis elegans] >sp|O16785|O16785 T21D12.4 PROTEIN. Length = 375	gi|2315828	310	1188	53	73	HOEBV08
112	831026			340	687			HOBAE30
113	831031			526	765			HTXOK56
114	831055	(AF091395) Trio isoform [Homo sapiens] >sp|O75962|O75962 TRIO ISOFORM. Length = 3038	gi|3644048	674	1921	93	94	HNTAT24
115	831057			3	1106			HNTCW73
116	831062			3	821			HNTBD04
117	831117			400	579			HMWBR70
118	831122	cell surface glycoprotein [Homo sapiens] >gi|567110 [Human CD79b/Ig beta/B29 gene, complete coding sequence.], gene product [Homo sapiens] >bbs|122035 membrane immunoglobulin beta chain, Ig-beta=Ag receptor complex [human, B cells, Peptide, 229 aa] [Homo	gi|179312	2	772	91	92	HMWCV70
119	831125			868	1023			HMWFH12
120	831132			36	185			HMUAR55

121	831152	(AC004668) similar to murine cell cycle regulator MIDA1; similar to A57591 (PID:g2137417) [Homo sapiens] >sp|O60414|O60414 WUGSC:H_RG276O03.1A PROTEIN (FRAGMENT). Length = 635	gi|3115346	111	875	90	91	HMVAI57
122	831157	(AF030109) regulator of G protein signaling 12 [Homo sapiens] >gi|2766633 (AF030152) regulator of G protein signaling 12 [Homo sapiens] Length = 799	gi|2605780	664	1110	100	100	HMVAA24
123	831160	ezrin (AA 1-586) [Homo sapiens] >pir|A34400|A34400 ezrin - human >sp|P15311|EZRI_HUMAN EZRIN (P81) (CYTOVILLIN) (VILLIN-2). {SUB 2-586} >gi|340217 cytovillin 2 [Homo sapiens] {SUB 12-586} Length = 586	gi|31283	3	1907	100	100	HCRPE60
124	831193			256	378			HMIAG77
125	831197			884	1267			HMELQ02
126	831217			152	427			HTAAN07
127	831239			420	638			HAKBB67
128	831248			84	443			HCFLL08
129	831313	c-fos protein [Homo sapiens] >gi|29904 c-fos gene product [Homo sapiens] >gi|4063509 (AF111167) cfos [Homo sapiens] >pir|A01342|TVHUF1 transforming protein fos - human >sp|P01100|FOS_HUMAN P55-C-FOS PROTO-ONCOGENE PROTEIN (G0S7 PROTEIN). >sp|G4063509|G406	gi|182735	1182	1670	83	88	HAGDZ30
130	831369			31	1464			HDFQB94

131	831371			81	344			HLADA28
132	831373	cytochrome P450j [Homo sapiens] >gi|181356 cytochrome P450IIE1 [Homo sapiens] >pir|A31949|A31949 cytochrome P450 2E1 - human >sp|P05181|CPE1_HUMAN CYTOCHROME P450 2E1 (EC 1.14.14.1) (CYPIIE1) (P450-J). >gnl|PID|d1001366 cytochrome P450IIE1 [Homo sapiens]	gi|181360	221	1744	94	94	HWADP47
133	831387	hydroxymethylglutaryl-CoA synthase [Homo sapiens] >gi|2463646 3-hydroxy-3-methylglutaryl CoA synthase [Homo sapiens] >pir|S71623|S71623 hydroxymethylglutaryl-CoA synthase (EC 4.1.3.5) precursor, mitochondrial - human >sp|P54868|HMCM_HUMAN HYDROXYMETHYLGLU	gi|619877	717	1586	100	100	HWLLY45
134	831410	mucin 2 precursor, intestinal - human (fragments) >gi|186396 mucin [Homo sapiens] {SUB 626-1895} >gi|186398 MUC2 [Homo sapiens] {SUB 2037-3020} >gi|188874 intestinal mucin [Homo sapiens] {SUB 1916-2193} >gi|188615 mucin-like protein [Homo sapiens] {SUB 23	pir|A49963|A43932	2	727	95	96	HCQDM23
135	831448	calcium-modulated protein S100-beta [artificial sequence] >pir|A91254|BCBOIB S-100 protein beta chain - bovine {SUB 2-92} Length = 92	gi|554574	126	482	32	60	HKACO81
136	831450			807	1319			HKABK55

<table>
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<tr><td>137</td><td>831472</td><td></td><td></td><td>1</td><td>138</td><td></td><td></td><td>HJMBH59</td></tr>
<tr><td>138</td><td>831473</td><td>(AF020043) chromosome-associated polypeptide [Homo sapiens] >sp|O60464|O60464 CHROMOSOME-ASSOCIATED POLYPEPTIDE (BAMACAN PROTEIN). >gnl|PID|e1285055 (AJ005015) bamacan protein [Homo sapiens] {SUB 827-1217} Length = 1217</td><td>gi|3089368</td><td>40</td><td>3765</td><td>89</td><td>89</td><td>HKACE68</td></tr>
<tr><td>139</td><td>831474</td><td></td><td></td><td>1231</td><td>1746</td><td></td><td></td><td>HWHPX60</td></tr>
<tr><td>140</td><td>831494</td><td></td><td></td><td>2</td><td>616</td><td></td><td></td><td>HISES08</td></tr>
<tr><td>141</td><td>831506</td><td>excision repair protein [Homo sapiens] >gi|182174 excision repair protein [Homo sapiens] >gi|2583146 (AF001925) excision repair protein [Homo sapiens] >pir|A32875|A24781 excision repair protein - human >sp|P07992|ERC1_HUMAN DNA EXCISION REPAIR PROTEIN ERC</td><td>gi|182177</td><td>3</td><td>596</td><td>100</td><td>100</td><td>HICAF79</td></tr>
<tr><td>142</td><td>831533</td><td>similar to yeast adenylate cyclase (S56776) [Homo sapiens] >sp|Q92627|Q92627 MYELOBLAST KIAA0231 (FRAGMENT). Length = 476</td><td>gnl|PID|d1013909</td><td>1</td><td>900</td><td>51</td><td>69</td><td>HCRPH87</td></tr>
<tr><td>143</td><td>831539</td><td>growth and transformation dependent protein [Rattus norvegicus] >pir|A26882|A26882 pI1.2 hypothetical protein - rat (fragment) >sp|Q63571|Q63571 RAT GROWTH AND TRANSFORMATION-DEPENDENT (FRAGMENT). Length = 175</td><td>gi|207250</td><td>102</td><td>572</td><td>81</td><td>97</td><td>HDTIT02</td></tr>
<tr><td>144</td><td>831556</td><td></td><td></td><td>395</td><td>625</td><td></td><td></td><td>HDTLJ87</td></tr>
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145	831594			117	677			HHECU01
146	831598	protein serine/threonine kinase [Homo sapiens] >gi|468789 CDK activating kinase [Homo sapiens] >gi|485909 MO15/CDK-activating kinase (CAK) [Homo sapiens] >gnl|PID|e257806 Cdk-activating kinase [Homo sapiens] >pir|A54820|A54820 CDK-activating protein kinas	gi|348243	23	802	99	99	HHEDO14
147	831608	translational initiation factor beta subunit [Homo sapiens] >pir|A31226|A31226 translation initiation factor eIF-2 beta chain - human >pir|S13147|S13147 protein synthesis factor - rabbit >sp|P20042|IF2B_HUMAN EUKARYOTIC TRANSLATION INITIATION FACTOR 2 BET	gi|182067	120	1154	87	87	HHEFB46
148	831613	Human giant larvae homologue [Homo sapiens] >pir|S55474|S55474 Human giant larvae homolog - human >sp|Q14521|Q14521 GIANT LARVAE HOMOLOGUE. Length = 1015	gi|854124	3	104	96	100	HISAU33
149	831622	alpha 1-acid glycoprotein [Homo sapiens] >gi|1340138 alpha 1-acid glycoprotein [Homo sapiens] {SUB 39-86} Length = 201	gnl|PID|e222211	46	690	99	99	HGBHZ56

150	831631	aldose reductase-like peptide [Homo sapiens] >sp|O60218|O60218 ALDOSE REDUCTASE-LIKE PEPTIDE (ALDOSE REDUCTASE-RELATED PROTEIN). >gi|3098514 (AF044961) aldose reductase-related protein [Homo sapiens] {SUB 232-316} Length = 316	gi|3150035	100	1173	100	100	HGBAX75
151	831632			2	226			HGBCC19
152	831653	lambda-crystallin precursor [Oryctolagus cuniculus] >pir|A31992|A31992 lambda-crystallin - rabbit >sp|P14755|CRYL_RABIT LAMBDA-CRYSTALLIN. {SUB 2-320} Length = 320	gi|164905	172	927	85	90	HTJNI73
153	831655	weak similarity to TPR domains [Caenorhabditis elegans] >sp|Q23049|Q23049 SIMILARITY TO TPR DOMAINS. Length = 458	gi|1465826	3	662	32	54	HFVHF47
154	831708	vascular endothelial growth factor [Homo sapiens] >sp|Q16889|Q16889 VASCULAR ENDOTHELIAL GROWTH FACTOR (FRAGMENT). >pir|A41551|A41551 vascular endothelial growth factor 206 precursor - human {SUB 23-254} >bbs|85194 vascular endothelial growth factor; VEGF	gi|3712671	96	410	98	100	HFIUT25
155	831738			313	573			HFCA179

156	831741	myelodysplasia/myeloid leukemia factor 2 [Homo sapiens] >gi|3387897 (AF070539) myelodysplasia/myeloid leukemia factor 2 [Homo sapiens] >sp|Q15773|Q15773 MYELODYSPLASIA/MYELOID LEUKEMIA FACTOR 2. Length = 248	gi|1399745	186	974	77	77	HFEBT03
157	831754	multidrug resistance protein 3 [Homo sapiens] >gnl|PID|e1288198 multidrug resistance protein 3 [Homo sapiens] >sp|O60922|O60922 MULTIDRUG RESISTANCE PROTEIN 3. Length = 1526	gnl|PID|e1288198	1	924	92	92	HWMEZ67
158	831760			373	510			HETEH76
159	831780			2	1003			HELGH58
160	831796			892	1158			HE9RY54
161	831800	nuclear protein SA-2 [Homo sapiens] >sp|O00540|O00540 NUCLEAR PROTEIN SA-2. Length = 1162	gnl|PID|e250094	600	1541	93	93	HFIAU59
162	831807			1015	1341			HE9QD17
163	831812			520	765			HE9OY91
164	831813			83	793			HEAHA84
165	831830	isoleucyl-tRNA synthetase [Homo sapiens] >pir|I59314|I59314 isoleucine--tRNA ligase (EC 6.1.1.5) - human Length = 1266	gnl|PID|d1006382	52	2307	98	99	HE8TV13
166	831860	Similarity to S. Pombe BEM1/BUD5 suppressor;	gnl|PID|e1347870	465	776	69	84	HE8OT93
167	831872			1	1671			HE8CL14
168	831896			1	2121			HDTDX05

169	831928	(AF061795) dynamin-like protein Dymple isoform [Homo sapiens] >sp|O60709|O60709 DYNAMIN-LIKE PROTEIN DYMPLE ISOFORM. Length = 699	gi|3126874	2	778	77	77	HSYBO86
170	831949			3	1109			HE8TX12
171	831950			48	521			HAPQS51
172	831953	carbonic anhydrase II [Homo sapiens] >gi|179780 carbonic anhydrase II [Homo sapiens] >gi|179795 carbonic anhydrase II [Homo sapiens] >gi|29587 carbonic anhydrase II (AA 1-260) [Homo sapiens]	gi|179772	106	987	100	100	HWLHA60
173	831975			555	761			HDTBO06
174	832036	human phosphotyrosine phosphatase kappa [Homo sapiens] Length = 1439	gnl|PID|e234080	2	490	82	82	HCYAC13
175	832047			877	1137			HCWKS85
176	832078			751	1014			HA5AB14
177	832100			687	917			HCRNM09
178	832104			95	220			HCRMU71
179	832268			18	191			HTXOU56
180	832270	Ca2+ ATPase of fast-twitch skeletal muscle sacroplasmic reticulum, adult isoform [Homo sapiens] >sp|O14983|O14983 CA2+ ATPASE OF FAST-TWITCH SKELETAL MUSCLE SACROPLASMIC RETICULUM, ADULT ISOFORM. Length = 1001	gi|2052522	622	1290	90	91	HBKDW03

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<tr><td>181</td><td>832279</td><td>acetyl-CoA synthetase [Drosophila melanogaster] >pir|S52154|S52154 acetyl-CoA synthetase - fruit fly (Drosophila melanogaster) >sp|Q24226|Q24226 ACETYL-COENZYME A SYNTHETASE (EC 6.2.1.1) (ACETATE--COA LIGASE) (ACYL-ACTIVATING ENZYME). Length = 581</td><td>gi|608694</td><td>2</td><td>1237</td><td>65</td><td>77</td><td>HBKDN33</td></tr>
<tr><td>182</td><td>832317</td><td>11kD protein [Homo sapiens] Length = 111</td><td>gi|897917</td><td>270</td><td>719</td><td>100</td><td>100</td><td>HBIAX17</td></tr>
<tr><td>183</td><td>832354</td><td></td><td></td><td>1</td><td>408</td><td></td><td></td><td>HBBBE52</td></tr>
<tr><td>184</td><td>832364</td><td></td><td></td><td>3</td><td>1385</td><td></td><td></td><td>HDPQA93</td></tr>
<tr><td>185</td><td>832378</td><td>sialidase [Homo sapiens] >gi|2773339 (AF040958) lysosomal neuraminidase precursor [Homo sapiens] >gi|4099141 lysosomal sialidase [Homo sapiens] >sp|Q99519|Q99519 SIALIDASE PRECURSOR. >sp|G4099141|G4099141 LYSOSOMAL SIALIDASE PRECURSOR (EC 3.2.1.18). Lengt</td><td>gnl|PID|e303801</td><td>3</td><td>746</td><td>96</td><td>96</td><td>HATCO72</td></tr>
<tr><td>186</td><td>832385</td><td>(AF048700) gastrointestinal peptide [Homo sapiens] >sp|O60575|O60575 GASTROINTESTINAL PEPTIDE. Length = 86</td><td>gi|2935440</td><td>2</td><td>316</td><td>90</td><td>90</td><td>HARAG42</td></tr>
<tr><td>187</td><td>832428</td><td>APO-1 ANTIGEN, FAS ANTIGEN. Length = 335</td><td>sp|G249613|G249613</td><td>136</td><td>846</td><td>97</td><td>97</td><td>HAMGD53</td></tr>
<tr><td>188</td><td>832485</td><td></td><td></td><td>202</td><td>597</td><td></td><td></td><td>HAGHC54</td></tr>
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189	832494	Ku protein subunit [Homo sapiens] >gi|178650 p70 autoantigen [Homo sapiens] >gi|339667 thyroid autoantigen [Homo sapiens] >bbs|107206 Ku autoantigen p70 subunit [human, Peptide, 609 aa] [Homo sapiens] >pir|A30299|A30894 70K thyroid autoantigen - human >sp	gi|307095	80	1918	90	90	HAIBY70
190	832512	Similar to Human C219-reactive peptide (L34688) [Homo sapiens] >sp|Q92580|Q92580 MYELOBLAST KIA0268 (FRAGMENT). >gi|511639 C219-reactive peptide [Homo sapiens] {SUB 592-727} Length = 1193	gnl|PID|d1014138	3	1058	87	87	HDPTT16
191	832515	integrin alpha6 subunit [Homo sapiens] Length = 1067	gi|33942	2	1660	96	96	HCRPH70
192	832526	nuclear factor RIP140 [Homo sapiens] >pir|S57348|S57348 nuclear factor RIP140 - human Length = 1158	gi|940539	34	693	95	95	HADCX04
193	832575	protein tyrosine kinase [Homo sapiens] >pir|A55922|A55922 tyrosine kinase A6 - human >sp|Q12792|Q12792 PROTEIN TYROSINE KINASE. Length = 350	gi|451482	49	1203	99	99	H2LAJ21
194	832576	BTG1 gene product [Homo sapiens] >gi|293306 BTG1 [Mus musculus] >gi|50188 btg1 [Mus musculus] >pir|S20947|S20947 BTG1 protein - human >pir|I48272|I48272 btg1 protein - mouse >sp|P31607|BTG1_HUMAN BTG1 PROTEIN (B-CELL TRANSLOCATION GENE 1 PROTEIN). Length	gi|29509	388	1050	100	100	HKGAJ67

195	832588	mitochondrial ATP synthase subunit 9 precursor [Homo sapiens] >pir|I38612|I38612 ATP synthase chain 9 precursor, mitochondrial - human >sp|P48201|AT93_HUMAN ATP SYNTHASE LIPID-BINDING PROTEIN P3 PRECURSOR (EC 3.6.1.34) (ATPASE PROTEIN 9) (SUBUNIT C). Leng	gi|511450	2	637	85	85	H2LAD51
196	832634			253	924			HCRMZ25
197	832728			3	542			HKAIL83
198	833094	immunoglobulin from VH4 family [Homo sapiens] >pir|S13519|S13519 Ig heavy chain V region precursor - human >gi|553385 immunoglobulin heavy chain [Homo sapiens] {SUB 24-125} Length = 147	gi|37725	2	391	77	81	HRADC46
199	833395			224	853			HHENV68
200	834326	novel stromal cell protein [Mus musculus] >pir|JC4761|JC4761 recombination activating gene 1 inducing protein - human >sp|Q62275|Q62275 RECOMBINATION ACTIVATING PROTEIN 1 PROTEIN ACTIVATION (NOVEL STROMAL CELL PROTEIN). Length = 221	gnl|PID|e229590	1	744	69	76	HWLEQ41
201	834583	(AF073957) CXC chemokine BRAK [Homo sapiens] Length = 99	gi|4140394	2	607	98	100	HHGDE66
202	834944	(AF061443) G protein-coupled receptor LGR4 [Rattus norvegicus] >sp|G3885470|G3885470 G PROTEIN-COUPLED RECEPTOR LGR4. Length	gi|3885470	2	781	85	86	HE8QE56

		= 951							
203	835012			3	344			HCCMD55
204	835104	(AB017169) Slit-3 protein [Homo sapiens] >sp|D1036172|D1036172 SLIT-3 PROTEIN. >gnl|PID|d1033429 (AB011538) MEGF5 [Homo sapiens] {SUB 785-1523} Length = 1523	gnl|PID|d1036172	580	1818	92	92	HLHTJ57
205	835332	(AF065389) tetraspan NET-4 [Homo sapiens] >sp|O60746|O60746 TETRASPAN NET-4. Length = 268	gi|3152703	268	1080	100	100	HCROP84
206	835487	(AC002528) alpha2(I) collagen [Homo sapiens] >sp|G2388555|G2388555 ALPHA2(I) COLLAGEN (FRAGMENT). Length = 1186	gi|2388555	2218	4239	100	100	HTSGZ29
207	836182			39	398			HFLUE31
208	836522			1819	2046			HSLFO17
209	836655			1	624			HTPCU04
210	836787	calmodulin-dependent protein kinase II-delta (EC 2.7.1.37) [Rattus norvegicus] >pir|A34366|A34366 Ca2+/calmodulin-dependent protein kinase (EC 2.7.1.123) II delta chain - rat >sp|P15791|KCCD_RAT CALCIUM/CALMODULIN-DEPENDENT PROTEIN KINASE TYPE II DELTA CH	gi|203267	767	1549	92	94	HAIED73

211	836789	GP36b glycoprotein [Homo sapiens] >pir|G01447|G01447 GP36b glycoprotein - human >sp|Q12907|Q12907 GP36B GLYCOPROTEIN PRECURSOR. Length = 356	gi|505652	1	849	99	99	HKAAD74
212	838577	binding protein [Oryctolagus cuniculus] >gi|182628 FK506-binding protein (FKBP) [Homo sapiens] >gi|182633 FKBP-12 protein [Homo sapiens] >gi|182649 FK506-binding protein 12 [Homo sapiens] >gi|288196 FKBP [Homo sapiens] >gi|665650 FK-506 binding protein [H	gi|165023	2	433	100	100	HCRQD09
213	838717			676	900			HE8UJ03
214	839008			2	997			HFOXS52
215	840063	(AF006751) ES/130 [Homo sapiens] >sp|O75300|O75300 ES/130. Length = 977	gi|3299885	3	2729	84	85	HWLHX68
216	840533			183	482			HWLLU74
217	840669			474	1115			HPMGM71
218	841140	(AF081281) lysophospholipase [Homo sapiens] >sp|O75608|O75608 LYSOPHOSPHOLIPASE. Length = 230	gi|3415123	1	789	100	100	HAJCC51
219	841386	polypeptide GalNAc transferase-T4 [Mus musculus] >sp|O08832|O08832 POLYPEPTIDE GALNAC TRANSFERASE-T4. Length = 578	gi|2121220	491	1258	66	81	HMCCA66
220	841480			3	212			HDQET68
221	841509			3	662			HTELO87
222	841616			340	660			HWLFT95

223	841900	peptidylarginine deiminase (EC 3.5.3.15) [Rattus norvegicus] >pir|A34339|DIRTR1 protein-arginine deiminase (EC 3.5.3.15) I - rat >sp|P20717|PARD_RAT PROTEIN-ARGININE DEIMINASE (EC 3.5.3.15) (PEPTIDYLARGININE DEIMINASE). Length = 665	gi|205960	2	439	87	90	HWLFR87
224	842054	ubiquinone-binding protein (QP) [Homo sapiens] >gi|190816 ubiquinone-binding protein precursor [Homo sapiens] >gi|37580 ubiquinone-binding protein (AA 1 - 111) [Homo sapiens] >pir|A32450|A32450 ubiquinone-binding protein QP-C - human >gi|553631 ubiquinone	gi|190802	1	369	100	100	HWHPF06
225	843061	(AB012933) acyl-CoA synthetase 5 [Rattus norvegicus] >sp|O88813|LCFE_RAT LONG-CHAIN-FATTY-ACID--COA LIGASE 5 (EC 6.2.1.3) (LONG-CHAIN ACYL-COA SYNTHETASE 5) (LACS 5). Length = 683	gnl|PID|d1034547	23	2308	81	92	HDAAV92
226	843544			2	391			HFLNB80
227	844092	(AF045573) FLI-LRR associated protein-1 [Mus musculus] >sp|O70323|O70323 FLIGHTLESS-I ASSOCIATED PROTEIN 1 (LRR DOMAIN) (FLI-LRR ASSOCIATED PROTEIN-1). Length = 628	gi|3025718	28	837	65	83	HTEKO43

228	844270	nuclear antigen EBNA-3B [Human herpesvirus 4] >pir|S27921|S27921 nuclear antigen EBNA-3B - human herpesvirus 4 >sp|Q69139|Q69139 NUCLEAR ANTIGEN EBNA-3B. Length = 946	gi|330409	2	373	47	52	HWLBL06
229	844604	(AF071186) WW domain binding protein 11 [Mus musculus] >sp|O88539|O88539 WW DOMAIN BINDING PROTEIN 11. Length = 389	gi|3550082	170	2110	66	70	HNTAD40
230	844685	immunoglobulin lambda heavy chain [Homo sapiens] >gi|567132 This CDS feature is included to show the translation of the corresponding C_region. Presently translation qualifiers on C_region features are illegal [Homo sapiens] {SUB 148-177} Length = 477	gnl|PID|e1227585	539	1564	94	94	HASAC08
231	844855	titin [Oryctolagus cuniculus] >sp|E1355301|E1355301 TITIN (FRAGMENT). Length = 2000	gnl|PID|e1355301	3	1634	34	54	HAICQ70
232	845101	(AF089814) growth suppressor related [Homo sapiens] >sp|O75956|O75956 GROWTH SUPPRESSOR RELATED. Length = 126	gi|3661529	46	627	94	94	HHESZ77
233	845141			31	966			HWMFO67
234	845220	(AB011105) KIAA0533 protein [Homo sapiens] >sp|O15230|O15230 KIAA0533 PROTEIN (LAMININ ALPHA 5 CHAIN) (FRAGMENT). >gnl|PID|e317479 laminin alpha 5 chain [Homo sapiens] {SUB 693-1645} Length = 1645	gnl|PID|d1026389	2	1096	100	100	HKADF64

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<tr><td>235</td><td>845434</td><td>glutathione peroxidase [Synechocystis sp.] >pir|S75885|S75885 glutathione peroxidase homolog - Synechocystis sp. (PCC 6803) >sp|P74250|P74250 GLUTATHIONE PEROXIDASE (EC 1.11.1.9). Length = 169</td><td>gnl|PID|d1019077</td><td>3</td><td>590</td><td>50</td><td>61</td><td>HWAFI12</td></tr>
<tr><td>236</td><td>845510</td><td>dipeptidyl peptidase III [Rattus norvegicus] >sp|O55096|O55096 DIPEPTIDYL PEPTIDASE (EC 3.4.14.4) (DIPEPTIDYL PEPTIDASE III) (DIPEPTIDYL AMINOPEPTIDASE III) (DIPEPTIDYL ARYLAMIDASE III) (RED CELL ANGIOTENSINASE) (ENKEPHALINASE B). Length = 827</td><td>gnl|PID|d1025528</td><td>3</td><td>683</td><td>96</td><td>98</td><td>HEONN92</td></tr>
<tr><td>237</td><td>845600</td><td>preprocathepsin B [Homo sapiens] >pir|A26498|KHHUB cathepsin B (EC 3.4.22.1) precursor - human >sp|P07858|CATB_HUMAN CATHEPSIN B PRECURSOR (EC 3.4.22.1) (CATHEPSIN B1) (APP SECRETASE). >gi|181178 lysosomal proteinase cathepsin B [Homo sapiens] {SUB 131-33</td><td>gi|181192</td><td>223</td><td>1254</td><td>99</td><td>99</td><td>HOEME38</td></tr>
<tr><td>238</td><td>845882</td><td>(AF055666) kinesin light chain 2 [Mus musculus] >sp|O88448|O88448 KINESIN LIGHT CHAIN 2. Length = 599</td><td>gi|3347848</td><td>4</td><td>1155</td><td>68</td><td>75</td><td>HLHCE82</td></tr>
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239	846007	alpha-1-acid glycoprotein 2 [Homo sapiens] >pir|JT0326|OMHU2 alpha-1-acid glycoprotein 2 precursor - human >sp|P19652|A1AH_HUMAN ALPHA-1-ACID GLYCOPROTEIN 2 PRECURSOR (AGP 2) (OROSOMUCOID 2) (OMD 2). >gi|388511 alpha 1-acid glycoprotein [Homo sapiens] {SU	gi|177840	1	390	98	100	HLDBS16
240	846280			31	105			HCNAK57
241	846286	epididymal apical protein I-precursor [Macaca fascicularis] >pir|S28258|S28258 androgen-regulated epididymal protein precursor - crab-eating macaque >sp|Q28475|Q28475 EPIDIDYMAL APICAL PROTEIN I-PRECURSOR. Length = 776	gi|38063	203	901	36	54	HASDA19
242	846388			3	1721			HL3AA32
243	HCRNG17R			154	288			HCRNG17
244	HWMFG64R			1	315			HWMFG64
245	HAGCZ94R			13	102			HAGCZ94
246	HBJEJ74R			72	287			HBJEJ74
247	HUFBE67R			355	525			HUFBE67
248	HUTHM43R			2	55			HUTHM43
249	HLTGU75R			2	274			HLTGU75
250	HWLKF77R			51	134			HWLKF77
251	HWLLK67R			1	180			HWLLK67
252	HDQIE85R			3	203			HDQIE85
253	HWLFA67R			1	213			HWLFA67
254	HWLGX29R			136	351			HWLGX29
255	HWMFZ29R			324	404			HWMFZ29

256	HNTRR03R			1	363			HNTRR03
257	H6EEP19R			2	103			H6EEP19
258	HJMAM83R			2	352			HJMAM83
259	HAGHF58R	(AB018797) calmodulin B [Halocynthia roretzi] >sp|D1034943|D1034943 CALMODULIN B. Length = 149	gnl|PID|d1034943	1	138	88	88	HAGHF58
260	HDPHG48R	(AC005031) neuronal apoptosis inhibitory protein [Homo sapiens] >sp|O75857|O75857 NEURONAL APOPTOSIS INHIBITORY PROTEIN (FRAGMENT). Length = 1178	gi|3688110	1	354	98	99	HDPHG48
261	HWLUL19R	(AC005154) similar to protein U28928 (PID:g861306) [Homo sapiens] >sp|O75223|O75223 WUGSC:H_DJ0777O23.1 PROTEIN. Length = 188	gi|3242764	2	211	59	62	HWLUL19
262	HWLLI56R	(AD000684) liver-specific bHLH-Zip transcription factor [Homo sapiens] >sp|O00112|O00112 LIVER-SPECIFIC BHLH-ZIP TRANSCRIPTION FACTOR (FRAGMENT). Length = 429	gi|1905918	1	489	61	65	HWLLI56
263	HWMAA87R	(AF001904) 3-hydroxyacyl-CoA dehydrogenase isoform 2 [Homo sapiens] >sp|O00397|O00397 3-HYDROXYACYL-COA DEHYDROGENASE ISOFORM 2 (FRAGMENT). Length = 76	gi|2108130	3	92	86	86	HWMAA87
264	HGLAT96R	(AF007861) ce-Mago [Caenorhabditis elegans] >sp|O16104|O16104 CE-MAGO (FRAGMENT). Length = 147	gi|2306971	165	359	91	91	HGLAT96

265	HCDMC32R	(AF014118) membrane-associated kinase [Homo sapiens] >sp|O14731|O14731 MEMBRANE-ASSOCIATED KINASE. Length = 499	gi|2460023	3	272	100	100	HCDMC32
266	HCROF25R	(AF034800) liprin-alpha3 [Homo sapiens] >sp|G3309535|G3309535 LIPRIN-ALPHA3 (FRAGMENT). Length = 443	gi|3309535	70	381	60	65	HCROF25
267	HTEQO80R	(AF035840) NADH:ubiquinone oxidoreductase B17 subunit [Homo sapiens] >sp|G3800740|G3800740 NADH:UBIQUINONE OXIDOREDUCTASE B17 SUBUNIT. Length = 128	gi|3800740	1	327	100	100	HTEQO80
268	H2LAU18R	(AF035940) similar to mago nashi [Homo sapiens] >gi|2330011 (AF007862) mm-Mago [Mus musculus] >gi|2909828 (AF035939) similar to mago nashi [Mus musculus] >sp|O35169|O35169 MM-MAGO. >sp|G2909830|G2909830 MAGOH. >sp|P50606|MGN_HUMAN MAGO NASHI PROTEIN HOMOL	gi|2909830	2	592	100	100	H2LAU18
269	HTXPO87R	(AF038129) polyubiquitin [Ovis aries] >sp|O46543|O46543 POLYUBIQUITIN. >gnl|PID|e1263307 unnamed protein product [unidentified] {SUB 77-305} >gi|163575 polyubiquitin [Bos taurus] {SUB 142-305} >gi|1762374 polyubiquitin [Gallus gallus] {SUB 1-71} >gnl|PID|	gi|2707837	1	330	97	97	HTXPO87

270	H2LAR08R	(AF040642) contains similarity to RNA recognition motifs (RNP) [Caenorhabditis elegans] >sp|O44795|O44795 C50D2.5 PROTEIN. Length = 200	gi|2746787	188	514	75	90	H2LAR08
271	HADAF94R	(AF044957) NADH:ubiquinone oxidoreductase B15 subunit [Homo sapiens] Length = 129	gi|4164446	88	135	88	88	HADAF94
272	HEMDA91R	(AF047473) testis mitotic checkpoint BUB3 [Homo sapiens] >sp|O43685|O43685 TESTIS MITOTIC CHECKPOINT BUB3. Length = 326	gi|3378104	132	431	85	85	HEMDA91
273	HWMFN58R	(AF051426) slow delayed rectifier channel subunit [Homo sapiens] >sp|O60607|O60607 SLOW DELAYED RECTIFIER CHANNEL SUBUNIT. Length = 548	gi|2961249	3	344	100	100	HWMFN58
274	HCNDJ66R	(AF054643) lambda 1 immunoglobulin light chain variable region [Homo sapiens] >gi|3023109 (AF054643) lambda 1 immunoglobulin light chain variable region [Homo sapiens] Length = 125	gi|3023109	1	276	72	73	HCNDJ66
275	HOHDH05R	(AF061833) aldehyde dehydrogenase; retinal dehydrogenase; class I aldehyde dehydrogenase; ALDH1 [Xenopus laevis] >sp|G3818533|G3818533 ALDEHYDE DEHYDROGENASE (EC 1.2.1.3). >pir|S51188|S51188 aldehyde dehydrogenase (NAD+) (EC 1.2.1.3), cytosolic - clawed f	gi|3818533	59	331	53	80	HOHDH05

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<tr><td>276</td><td>HUFBP63R</td><td>(AF062137) immunoglobulin heavy chain variable region [Homo sapiens] Length = 143</td><td>gi|3170737</td><td>17</td><td>463</td><td>92</td><td>96</td><td>HUFBP63</td></tr>
<tr><td>277</td><td>HUFBN90R</td><td>(AF062211) immunoglobulin heavy chain variable region [Homo sapiens] Length = 149</td><td>gi|3170885</td><td>26</td><td>463</td><td>94</td><td>96</td><td>HUFBN90</td></tr>
<tr><td>278</td><td>HEBEJ57R</td><td>(AF062214) immunoglobulin heavy chain variable region [Homo sapiens] Length = 142</td><td>gi|3170895</td><td>1</td><td>165</td><td>81</td><td>90</td><td>HEBEJ57</td></tr>
<tr><td>279</td><td>HDTDK65R</td><td>(AF069048) immunoglobulin light chain variable region [Homo sapiens] Length = 120</td><td>gi|3328006</td><td>3</td><td>434</td><td>76</td><td>78</td><td>HDTDK65</td></tr>
<tr><td>280</td><td>HAIAD82R</td><td>(AF069711) urokinase [Oryctolagus cuniculus] >sp|G3982741|G3982741 UROKINASE (FRAGMENT). Length = 128</td><td>gi|3982741</td><td>1</td><td>156</td><td>68</td><td>71</td><td>HAIAD82</td></tr>
<tr><td>281</td><td>HFKHD61R</td><td>(AF073298) 4F5rel [Homo sapiens] >gi|3641536 (AF073297) 4F5rel [Mus musculus] >sp|O75918|O75918 4F5REL. >sp|O88891|O88891 4F5REL. Length = 59</td><td>gi|3641538</td><td>3</td><td>203</td><td>100</td><td>100</td><td>HFKHD61</td></tr>
<tr><td>282</td><td>H2LAX28R</td><td>(AF078817) high mobility group protein [Nannospalax ehrenbergi] >sp|O88611|O88611 HIGH MOBILITY GROUP PROTEIN. Length = 215</td><td>gi|3342571</td><td>206</td><td>568</td><td>97</td><td>97</td><td>H2LAX28</td></tr>
<tr><td>283</td><td>HWLMY93R</td><td>(AF078839) Rho related protein Rnd3/Rho8 [Sus scrofa] >sp|O77683|O77683 RHO RELATED PROTEIN RND3/RHO8. Length = 244</td><td>gi|3386532</td><td>3</td><td>173</td><td>91</td><td>91</td><td>HWLMY93</td></tr>
<tr><td>284</td><td>HTXNL13R</td><td></td><td></td><td>3</td><td>356</td><td></td><td></td><td>HTXNL13</td></tr>
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285	HDPWR89R	(AJ005259) homologous to Bombyx mori multiprotein bridging factor (EMBL: AB001078) [Homo sapiens] >sp|O60869|O60869 EDF-1 PROTEIN. Length = 148	gnl|PID|e1286414	1	312	79	83	HDPWR89
286	H2LAK62R			22	165			H2LAK62
287	HWLKT15R	(AJ235272) UBIQUINONE/MENAQUINONE BIOSYNTHESIS METHLYTRANSFERASE UBIE (ubiE) [Rickettsia prowazekii]	gnl|PID|e1342961	2	301	50	76	HWLKT15
288	HATAR77R	(AL021546) Cytochrome C Oxidase Polypeptide VIa-liver precursor (EC 1.9.3.1) [Homo sapiens]	gnl|PID|e1248288	3	413	70	73	HATAR77
289	HWLWN07R	(AL022237) bK1191B2.2 (BCL2-interacting killer (apoptosis-inducing) (NBK, BP4, BIP1)) [Homo sapiens] >sp|E1359316|E1359316 BK1191B2.2 (BCL2-INTERACTING KILLER (APOPTOSIS-INDUCING) (NBK, BP4, BIP1)) (FRAGMENT). >gi|929655 NBK [Homo sapiens] {SUB 14-173} Le	gnl|PID|e1359316	1	183	82	88	HWLWN07
290	HWLDI18R	(AL023554) ribosomal protein [Schizosaccharomyces pombe] >sp|O60118|O60118 RIBOSOMAL PROTEIN. Length = 157	gnl|PID|e1292696	3	206	43	59	HWLDI18
291	HWMEC68R			3	419			HWMEC68

292	HTXFO53R	11 beta-hydroxysteroid dehydrogenase type II [Homo sapiens] >pir|I38858|I38858 11beta-hydroxysteroid dehydrogenase (EC 1.1.1.146) type 2 - human >sp|P80365|DHI2_HUMAN CORTICOSTEROID 11-BETA-DEHYDROGENASE, ISOZYME 2 (EC 1.1.1.146) (11- DH2) (11-BETA-HYDROX	gi|565082	3	236	88	94	HTXFO53
293	HWMEH18R	3',5'-cyclic-GMP phosphodiesterase (EC 3.1.4.35) alpha chain - human >gi|3513491 (AF022380) rod photoreceptor cGMP phosphodiesterase alpha subunit [Homo sapiens] {SUB 1-122} Length = 859	pir|B34611|B3461 1	3	203	92	92	HWMEH18
294	HCWFF03R	5' half of the product is homologues to Bacillus subtiis SAICAR synthetase, 3' half corresponds to the catalytic subunit of AIR carboxylase [Homo sapiens] >pir|S14147|S14147 multifunctional purine biosynthesis protein - human Length = 425	gi|28384	3	296	83	90	HCWFF03
295	HCNDP66R	A33 antigen precursor [Homo sapiens] >sp|Q99795|A33_HUMAN CELL SURFACE A33 ANTIGEN PRECURSOR. Length = 319	gi|1814277	3	503	73	75	HCNDP66
296	HCRMK82R	adenosine A2b receptor [Homo sapiens] >gi|757911 A2b adenosine receptor [Homo sapiens] >pir|JC1229|JC1229 adenosine receptor A2b - human >sp|P29275|AA2B_HUMAN	gi|178150	2	427	100	100	HCRMK82

		ADENOSINE A2B RECEPTOR. Length = 332						
297	HCDAN16R	alpha-1 collagen (I) [Gallus gallus] Length = 143	gi|555432	2	133	77	88	HCDAN16
298	HCEOE88R	amplaxin [Homo sapiens] >pir|A48063|A48063 mammary tumor/squamous cell carcinoma-associated protein EMS1 - human Length = 550	gi|182087	1	291	93	94	HCEOE88
299	HALSK30R	angiogenin [Homo sapiens] >pir|A90498|NRHUAG angiogenin precursor - human >sp|P03950|ANGI_HUMAN ANGIOGENIN PRECURSOR (EC 3.1.27.-). Length = 147	gi|178250	189	416	74	76	HALSK30
300	HDRME43R	anonymous [Homo sapiens] >pir|I39463|I39463 gene anonymous protein - human >sp|Q13769|Q13769 ANONYMOUS. Length = 683	gi|388012	2	346	94	95	HDRME43
301	HHEFA24R	APP-binding protein 1 [Rattus norvegicus] >sp|G4099878|G4099878 APP-BINDING PROTEIN 1. Length = 534	gi|4099878	10	177	63	65	HHEFA24
302	HSSGC52R	argininosuccinate synthetase [Bos taurus] >sp|P14568|ASSY_BOVIN ARGININOSUCCINATE SYNTHASE (EC 6.3.4.5) (CITRULLINE--ASPARTATE LIGASE). Length = 412	gi|162697	1	438	94	95	HSSGC52

303	HCYBN49R	ATP synthase beta subunit precursor [Homo sapiens] >pir|A33370|A33370 H+-transporting ATP synthase (EC 3.6.1.34) beta chain precursor, mitochondrial - human >sp|P06576|ATPB_HUMAN ATP SYNTHASE BETA CHAIN, MITOCHONDRIAL PRECURSOR (EC 3.6.1.34). >gi|28931 be	gi|179281	56	445	97	97	HCYBN49
304	HWMGB90R	ATP synthase subunit e [Homo sapiens] >sp|P56385|ATPJ_HUMAN ATP SYNTHASE E CHAIN, MITOCHONDRIAL (EC 3.6.1.34). {SUB 2-69} Length = 69	gi|2605592	1	165	58	61	HWMGB90
305	HTEAW21R	ATPase coupling factor 6 subunit [Homo sapiens] >pir|JT0563|JT0563 coupling factor 6 precursor, mitochondrial - human >sp|P18859|ATPR_HUMAN ATP SYNTHASE COUPLING FACTOR 6, MITOCHONDRIAL PRECURSOR (EC 3.6.1.34) (F6). Length = 108	gi|179275	47	259	93	93	HTEAW21
306	HCQCV96R	ATPase subunit 6 [Homo sapiens] >sp|Q34772|Q34772 ATP SYNTHASE A CHAIN (EC 3.6.1.34). Length = 226	gnl|PID|d1007873	147	368	58	61	HCQCV96
307	HLTDN74R	autotaxin-t [Homo sapiens] >sp|Q13822|Q13822 AUTOTAXIN-T. >gnl|PID|d1008938 phosphodiesterase I alpha [Homo sapiens] {SUB 1-45} Length = 863	gi|1160616	2	118	85	85	HLTDN74
308	HDABV61R	B-creatine kinase [Gallus gallus] Length = 65	gi|211524	3	230	93	100	HDABV61

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<tr><td>309</td><td>H2LAQ68R</td><td>beta prime cop [Bos taurus] >pir|S35312|S35312 coatomer complex beta' chain - bovine >sp|P35605|COPP_BOVIN COATOMER BETA' SUBUNIT (BETA'-COAT PROTEIN) (BETA'-COP) (P102). {SUB 2-906} Length = 906</td><td>gi|312732</td><td>127</td><td>558</td><td>100</td><td>100</td><td>H2LAQ68</td></tr>
<tr><td>310</td><td>HDTLN42R</td><td>beta-2-microglobulin [Pan troglodytes] >gi|177065 beta-2-microglobulin [Gorilla gorilla] >gnl|PID|d1036168 (AB021288) beta 2-microglobulin [Homo sapiens] >pir|A90976|MGHUB2 beta-2-microglobulin precursor - human >pir|I36963|I36963 beta-2-microglobulin pre</td><td>gi|176827</td><td>2</td><td>361</td><td>86</td><td>86</td><td>HDTLN42</td></tr>
<tr><td>311</td><td>HULFN47R</td><td>beta-2-microglobulin [Pan troglodytes] >gi|177065 beta-2-microglobulin [Gorilla gorilla] >gnl|PID|d1036168 (AB021288) beta 2-microglobulin [Homo sapiens] >pir|A90976|MGHUB2 beta-2-microglobulin precursor - human >pir|I36963|I36963 beta-2-microglobulin pre</td><td>gi|176827</td><td>3</td><td>449</td><td>88</td><td>89</td><td>HULFN47</td></tr>
<tr><td>312</td><td>HCRMI41R</td><td></td><td></td><td>1</td><td>528</td><td></td><td></td><td>HCRMI41</td></tr>
<tr><td>313</td><td>HWLIP53R</td><td></td><td></td><td>2</td><td>499</td><td></td><td></td><td>HWLIP53</td></tr>
<tr><td>314</td><td>HBAAD60R</td><td></td><td></td><td>2</td><td>463</td><td></td><td></td><td>HBAAD60</td></tr>
<tr><td>315</td><td>HCROA35R</td><td></td><td></td><td>3</td><td>500</td><td></td><td></td><td>HCROA35</td></tr>
<tr><td>316</td><td>HCROM64R</td><td></td><td></td><td>201</td><td>512</td><td></td><td></td><td>HCROM64</td></tr>
<tr><td>317</td><td>HEOPS84R</td><td></td><td></td><td>2</td><td>388</td><td></td><td></td><td>HEOPS84</td></tr>
<tr><td>318</td><td>HKBAG82R</td><td></td><td></td><td>32</td><td>265</td><td></td><td></td><td>HKBAG82</td></tr>
<tr><td>319</td><td>HUTSB76R</td><td></td><td></td><td>188</td><td>418</td><td></td><td></td><td>HUTSB76</td></tr>
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320	HWLJS67R			384	662			HWLJS67
321	HWLLZ82R			2	133			HWLLZ82
322	HCROM20R			351	557			HCROM20
323	HDQMC24R			1	144			HDQMC24
324	HOCTD89R			212	352			HOCTD89
325	HTGAZ53R			198	341			HTGAZ53
326	HWLKZ47R			429	626			HWLKZ47
327	HWLLL51R			204	416			HWLLL51
328	HRLAJ54R			207	548			HRLAJ54
329	HBAAD69R			1	456			HBAAD69
330	HWLJZ72R			25	453			HWLJZ72
331	HWMFG06R			43	321			HWMFG06
332	HPRTO65R	biliary glycoprotein a [Homo sapiens] >gnl|PID|d1015047 biliary glycoprotein, BGPg [Homo sapiens] >gi|3172151 (AC004785) BGPg_HUMAN [Homo sapiens] >pir|JH0394|JH0394 biliary glycoprotein g precursor - human Length = 417	gi|179438	2	166	93	97	HPRTO65
333	HUFDC01R	biliary glycoprotein 1 precursor [Homo sapiens] >gi|37198 TM1-CEA preprotein [Homo sapiens] >gi|3172148 (AC004785) BGP1_HUMAN [Homo sapiens] >pir|A32164|A32164 biliary glycoprotein 1 precursor - human >sp|P13688|BGP1_HUMAN BILIARY GLYCOPROTEIN 1 PRECURSOR	gi|179440	108	326	87	87	HUFDC01
334	HWLHY44R	bone-derived growth factor [Homo sapiens] >sp|Q13876|Q13876 BONE-DERIVED GROWTH FACTOR (FRAGMENT). Length = 793	gi|1203965	3	413	75	79	HWLHY44

335	HWLGR92R	brain glycogen phosphorylase [Homo sapiens] >pir|A29949|A29949 glycogen phosphorylase (EC 2.4.1.1), brain (astrocytoma cell line) - human Length = 863	gi|307200	122	238	100	100	HWLGR92
336	HCNCQ71R	CAG-isl 7 [Homo sapiens] Length = 213	gi|3126984	1	93	66	77	HCNCQ71
337	HBMCI28R	carbonic anhydrase I (EC 4.2.1.1) [Homo sapiens] >gi|29600 carbonic anhydrase I (AA 1-261) [Homo sapiens] >pir|JQ0786|CRHU1 carbonate dehydratase (EC 4.2.1.1) I - human >sp|P00915|CAH1_HUMAN CARBONIC ANHYDRASE I (EC 4.2.1.1) (CARBONATE DEHYDRATASE I). ¦SU	gi|179793	81	293	84	84	HBMCI28
338	HWLEN11R	carbonic anhydrase I (EC 4.2.1.1) [Homo sapiens] >gi|29600 carbonic anhydrase I (AA 1-261) [Homo sapiens] >pir|JQ0786|CRHU1 carbonate dehydratase (EC 4.2.1.1) I - human >sp|P00915|CAH1_HUMAN CARBONIC ANHYDRASE I (EC 4.2.1.1) (CARBONATE DEHYDRATASE I). ¦SU	gi|179793	84	347	80	80	HWLEN11
339	HMSDU92R	carbonic anhydrase II [Homo sapiens] >gi|179780 carbonic anhydrase II [Homo sapiens] >gi|179795 carbonic anhydrase II [Homo sapiens] >gi|29587 carbonic anhydrase II (AA 1-260) [Homo sapiens] >pir|A27175|CRHU2 carbonate dehydratase (EC 4.2.1.1) II - human	gi|179772	1	360	76	83	HMSDU92

340	HCDBF89R	carbonic anhydrase IV [Homo sapiens] >gi|409726 carbonic anhydrase IV [Homo sapiens] {SUB 73-294} Length = 294	gi|409725	11	160	87	90	HCDBF89
341	HCNDP16R	carboxylesterase hCE-2 [Homo sapiens] >sp|Q16859|Q16859 CARBOXYLESTERASE (EC 3.1.1.1) (ALI-ESTERASE) (B-ESTERASE) (MONOBUTYRASE) (COCAINE ESTERASE) (PROCAINE ESTERASE) (METHYLBUTYRASE). Length = 550	gi|1407780	1	252	70	71	HCNDP16
342	HWLGX53R	carcinoembryonic antigen [Homo sapiens] >gi|178677 carcinoembryonic antigen precursor [Homo sapiens] >pir|A36319|A36319 carcinoembryonic antigen precursor - human >sp|P06731|CCEM_HUMAN CARCINOEMBRYONIC ANTIGEN PRECURSOR (CEA) (MECONIUM ANTIGEN 100) (CD66E	gi|180223	19	138	73	73	HWLGX53
343	HWLEH56R	carcinoembryonic antigen [Homo sapiens] >gnl|PID|e249945 carcinoembryonic antigen [Homo sapiens] >gi|3702266 (AC005797) carcinoembryonic antigen CGM2 precursor - human [Homo sapiens] >pir|A55811|A55811 carcinoembryonic antigen CGM2 precursor - human >sp|Q	gi|471077	1	453	86	87	HWLEH56

<table>
<tr><td>344</td><td>H2LAD26R</td><td>CArG box-binding factor [Mus musculus] >gnl|PID|d1014884 CArG-binding factor-A [Mus musculus] >pir|JQ0448|JQ0448 CArG-binding factor-A - mouse >sp|Q99020|CABA_MOUSE CARG-BINDING FACTOR-A (CBF-A). Length = 285</td><td>gi|840648</td><td>43</td><td>387</td><td>98</td><td>98</td><td>H2LAD26</td></tr>
<tr><td>345</td><td>HADAF48R</td><td>CD99 typeII [Homo sapiens] >sp|O00518|O00518 CD99 TYPEII. Length = 160</td><td>gi|2149135</td><td>2</td><td>151</td><td>59</td><td>59</td><td>HADAF48</td></tr>
<tr><td>346</td><td>HCRNV62R</td><td>Cdc6-related protein [Homo sapiens] >gi|2465437 (AF022109) HsCdc18p [Homo sapiens] >sp|Q99741|Q99741 CDC6-RELATED PROTEIN. Length = 560</td><td>gi|1684903</td><td>2</td><td>442</td><td>90</td><td>91</td><td>HCRNV62</td></tr>
<tr><td>347</td><td>HCDCI17R</td><td>chaperonin-like protein [Homo sapiens] >pir|S48087|S48087 t-complex-type molecular chaperone CCT6 - human >gi|184462 chaperonin-like protein [Homo sapiens] {SUB 143-531} Length = 531</td><td>gi|517065</td><td>3</td><td>137</td><td>97</td><td>100</td><td>HCDCI17</td></tr>
<tr><td>348</td><td>HJUAA02R</td><td>Cks1 protein homologue [Homo sapiens] >pir|A36670|A36670 protein kinase cdc2 complex subunit CKS1 - human >sp|P33551|CKS1_HUMAN CYCLIN-DEPENDENT KINASES REGULATORY SUBUNIT 1 (CKS-1). Length = 79</td><td>gi|29977</td><td>186</td><td>386</td><td>96</td><td>96</td><td>HJUAA02</td></tr>
</table>

349	HKAKO78R	Cks1 protein homologue [Homo sapiens] >pir|B36670|B36670 protein kinase cdc2 complex subunit CKS2 - human >sp|P33552|CKS2_HUMAN CYCLIN-DEPENDENT KINASES REGULATORY SUBUNIT 2 (CKS-2). Length = 79	gi|29979	2	193	77	77	HKAKO78
350	H2CBD02R			58	522			H2CBD02
351	HWLCR90R	contains similarity to ATP/GTP-binding site motif (PS:PS00017) [Caenorhabditis elegans] >sp|Q94180|Q94180 SIMILARITY TO ATP/GTP-BINDING SITE MOTIF. Length = 398	gi|1519671	1	351	34	60	HWLCR90
352	H2LAK66R	core protein II precursor [Homo sapiens] >pir|A32629|A32629 ubiquinol--cytochrome-c reductase (EC 1.10.2.2) core protein II - human Length = 453	gi|180928	126	632	79	79	H2LAK66
353	HSDKC65R	CoxII/D-loop DNA fusion protein [Homo sapiens] >sp|Q34777|Q34777 COXII/D-LOOP DNA FUSION PROTEIN (FRAGMENT). Length = 125	gi|1374867	179	346	95	97	HSDKC65
354	H2LAK52R	CUL-2 [Homo sapiens] >sp|Q13617|CUL2_HUMAN CULLIN HOMOLOG 2 (CUL-2). Length = 745	gi|1923243	24	608	100	100	H2LAK52
355	HKAEG12R	cyclin B1 - human >sp|P14635|CGB1_HUMAN G2/MITOTIC-SPECIFIC CYCLIN B1. Length = 433	pir|A32992|A32992	3	392	98	98	HKAEG12
356	HKADP43R	cyclin F [Homo sapiens] >sp|P41002|CG2F_HUMAN G2/MITOTIC-SPECIFIC CYCLIN F. Length = 786	gi|576781	1	375	71	71	HKADP43

357	HLXND10R	cystatin B [Homo sapiens] >gi|1235678 cystatin B [Homo sapiens] >sp|P04080|CYTB_HUMAN CYSTATIN B (LIVER THIOL PROTEINASE INHIBITOR) (CPI-B) (STEFIN B). Length = 98	gi|291927	2	355	100	100	HLXND10
358	HUSJE17R	cytochrome c oxidase subunit II [Pan troglodytes] >sp|P26457|COX2_PANPA CYTOCHROME C OXIDASE POLYPEPTIDE II (EC 1.9.3.1). Length = 227	gi|336514	17	208	97	98	HUSJE17
359	HLHGH82R	cytochrome c oxidase subunit Va preprotein [Mus musculus] >pir|S05495|S05495 cytochrome-c oxidase (EC 1.9.3.1) chain Va precursor - mouse >sp|P12787|COXA_MOUSE CYTOCHROME C OXIDASE POLYPEPTIDE VA PRECURSOR (EC 1.9.3.1). Length = 145	gi|50527	2	106	94	94	HLHGH82
360	HHBEF06R	cytochrome oxidase III [Homo sapiens] >pir|A00482|OTHU3 cytochrome-c oxidase (EC 1.9.3.1) chain III - human mitochondrion (SGC1) >sp|P00414|COX3_HUMAN CYTOCHROME C OXIDASE POLYPEPTIDE III (EC 1.9.3.1). >gi|2245564 (AF004341) cytochrome c oxidase subunit I	gi|13010	167	373	75	80	HHBEF06

<table>
<tr><td>361</td><td>HISCW28R</td><td>cytochrome oxidase subunit II [Homo sapiens] >gi|530071 cytochrome oxidase subunit II [Homo sapiens] >gi|530073 cytochrome oxidase subunit II [Homo sapiens] >gi|530077 cytochrome oxidase subunit II [Homo sapiens] >gi|337187 cytochrome oxidase subunit II [</td><td>gi|530069</td><td>121</td><td>312</td><td>83</td><td>86</td><td>HISCW28</td></tr>
<tr><td>362</td><td>HODEN42R</td><td>cytochrome oxidase subunit II [Homo sapiens] >gi|530071 cytochrome oxidase subunit II [Homo sapiens] >gi|530073 cytochrome oxidase subunit II [Homo sapiens] >gi|530077 cytochrome oxidase subunit II [Homo sapiens] >gi|337187 cytochrome oxidase subunit II [</td><td>gi|530069</td><td>302</td><td>469</td><td>68</td><td>71</td><td>HODEN42</td></tr>
<tr><td>363</td><td>HOEMM43R</td><td>cytochrome oxidase subunit II [Homo sapiens] >gi|530071 cytochrome oxidase subunit II [Homo sapiens] >gi|530073 cytochrome oxidase subunit II [Homo sapiens] >gi|530077 cytochrome oxidase subunit II [Homo sapiens] >gi|337187 cytochrome oxidase subunit II [</td><td>gi|530069</td><td>1</td><td>180</td><td>64</td><td>67</td><td>HOEMM43</td></tr>
<tr><td>364</td><td>HPIAK29R</td><td>cytochrome oxidase subunit II [Homo sapiens] >gi|530071 cytochrome oxidase subunit II [Homo sapiens] >gi|530073 cytochrome oxidase subunit II [Homo sapiens] >gi|530077 cytochrome oxidase subunit II [Homo sapiens] >gi|337187 cytochrome oxidase subunit II [</td><td>gi|530069</td><td>295</td><td>441</td><td>63</td><td>70</td><td>HPIAK29</td></tr>
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<tr><td>365</td><td>HUFAR71R</td><td>cytochrome oxidase subunit II [Homo sapiens] >gi|530071 cytochrome oxidase subunit II [Homo sapiens] >gi|530073 cytochrome oxidase subunit II [Homo sapiens] >gi|530077 cytochrome oxidase subunit II [Homo sapiens] >gi|337187 cytochrome oxidase subunit II [</td><td>gi|530069</td><td>128</td><td>367</td><td>82</td><td>85</td><td>HUFAR71</td></tr>
<tr><td>366</td><td>HHEUL74R</td><td>cytochrome oxidase subunit II [Homo sapiens] >sp|Q37526|Q37526 CYTOCHROME C OXIDASE POLYPEPTIDE II (EC 1.9.3.1). Length = 227</td><td>gi|530075</td><td>3</td><td>227</td><td>70</td><td>74</td><td>HHEUL74</td></tr>
<tr><td>367</td><td>H2LAY36R</td><td>cytosolic malate dehydrogenase [Homo sapiens] >gi|3133269 malate dehydrogenase [Homo sapiens] >sp|P40925|MDHC_HUMAN MALATE DEHYDROGENASE, CYTOPLASMIC (EC 1.1.1.37). {SUB 2-334} Length = 334</td><td>gnl|PID|d1010156</td><td>10</td><td>609</td><td>84</td><td>88</td><td>H2LAY36</td></tr>
<tr><td>368</td><td>HOECI21R</td><td>decay-accelerating factor precursor [Homo sapiens] >gnl|PID|d1023771 (AB003312) decay accelerating factor [Homo sapiens] {SUB 286-340} Length = 376</td><td>gi|181463</td><td>3</td><td>548</td><td>73</td><td>75</td><td>HOECI21</td></tr>
<tr><td>369</td><td>HKAFY51R</td><td>desmoglein 2 [Homo sapiens] >pir|S38673|S38673 desmoglein 2 - human >sp|Q14126|DSG2_HUMAN DESMOGLEIN 2 PRECURSOR (HDGC). Length = 1117</td><td>gi|416178</td><td>1</td><td>429</td><td>100</td><td>100</td><td>HKAFY51</td></tr>
<tr><td>370</td><td>HMCAR63R</td><td>diazepam binding inhibitor [Homo sapiens] Length = 104</td><td>gi|181478</td><td>3</td><td>335</td><td>100</td><td>100</td><td>HMCAR63</td></tr>
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371	HWMAN06R	dopamine- and cAMP-regulated neuronal phosphoprotein [Sus scrofa] >sp|Q29277|IPPD_PIG DOPAMINE- AND CAMP-REGULATED NEURONAL PHOSPHOPROTEIN (DARPP-32) (FRAGMENT). Length = 137	gi|972053	1	222	83	83	HWMAN06
372	HDPLD04R	early growth response 2 protein (EGR2) - human >gi|181987 early growth response 2 protein [Homo sapiens] {SUB 51-456} Length = 456	pir|A40492|A40492	1	459	69	70	HDPLD04
373	HCEGK04R	elongation factor 2 [Gallus gallus] >sp|Q90705|EF2_CHICK ELONGATION FACTOR 2 (EF-2). {SUB 2-858} Length = 858	gi|1184958	87	182	95	95	HCEGK04
374	HWLMB57R	epidermal growth factor receptor kinase substrate [Homo sapiens] >pir|I38728|I38728 epidermal growth factor receptor kinase substrate - human >sp|Q12929|EPS8_HUMAN EPIDERMAL GROWTH FACTOR RECEPTOR KINASE SUBSTRATE EPS8. Length = 822	gi|530823	1	186	93	93	HWLMB57
375	HHFHF93R	epidermal growth factor receptor precursor [Homo sapiens] >sp|P21860|ERB3_HUMAN ERBB-3 RECEPTOR PROTEIN-TYROSINE KINASE PRECURSOR (EC 2.7.1.112). >gnl|PID|e304809 unnamed protein product [Homo sapiens] {SUB 1-27} Length = 1342	gi|181980	1	180	89	89	HHFHF93

376	HCDEM69R	epiligrin alpha 3 subunit [Homo sapiens] >pir|A55347|A55347 adhesive ligand epiligrin, alpha-3 chain form A precursor - human >sp|Q16787|LMA3_HUMAN LAMININ ALPHA-3 CHAIN PRECURSOR (EPILIGRIN 170 KD SUBUNIT) (E170). Length = 1713	gi|551597	136	282	95	95	HCDEM69
377	HCHNP50R	epithelial cell marker protein 1 [Homo sapiens] >pir|S38956|S38956 epithelial cell marker protein 1 - human Length = 248	gi|187302	54	218	94	94	HCHNP50
378	HAJAW27R	ERF-1 gene product [Homo sapiens] >pir|S34854|S34854 epidermal growth factor-response factor 1 - human >gi|972116 ERF-1 protein [Sus scrofa] {SUB 299-337} Length = 338	gi|825653	3	488	100	100	HAJAW27
379	HAICY55R	G-rich sequence factor-1 [Homo sapiens] >gi|517196 G-rich sequence factor-1 [Homo sapiens] >sp|Q12849|GRF1_HUMAN G-RICH SEQUENCE FACTOR-1 (GRSF-1). >pir|S48081|S48081 GRSF-1 protein - human (fragment) {SUB 94-424} Length = 424	gi|517196	3	374	50	50	HAICY55
380	HWLIA38R	gap junction protein (aa 1-283) [Homo sapiens] >pir|B29005|B29005 gap junction protein Cx32 - human >sp|P08034|CXB1_HUMAN GAP JUNCTION BETA-1 PROTEIN (CONNEXIN 32) (CX32) (GAP JUNCTION 28 KD LIVER PROTEIN). Length = 283	gi|31647	3	455	82	85	HWLIA38

381	HBXCL69R	glutamine--phenylpyruvate aminotransferase [Homo sapiens] >pir|S69001|S52790 glutamine--phenylpyruvate transaminase (EC 2.6.1.64) - human >sp|Q16773|Q16773 GLUTAMINE--PHENYLPYRUVATE AMINOTRANSFERASE (EC 2.6.1.64) (GLUTAMINE TRANSAMINASE K). Length = 422	gi|758591	81	419	61	67	HBXCL69
382	H2LAP90R	glutathione peroxidase [Homo sapiens] Length = 202	gi|488476	234	545	97	97	H2LAP90
383	HCQCR94R	glutathione peroxidase-GI [Homo sapiens] Length = 190	gi|579930	1	114	95	95	HCQCR94
384	HTELE03R	glutathione peroxidase-GI [Homo sapiens] Length = 190	gi|579930	14	202	100	100	HTELE03
385	HJMBN86R	glutathione-insulin transhydrogenase (216 AA) [Homo sapiens] Length = 216	gi|31746	2	202	97	100	HJMBN86
386	HSKJC32R	GTP:AMP phosphotransferase (EC 2.7.4.10) [Bos taurus] >gnl|PID|d1001680 mitochondrial adenylate kinase isozyme 3 [Bos taurus] >pir|A34442|A34442 nucleoside-triphosphate--adenylate kinase (EC 2.7.4.10) 3, mitochondrial - bovine >sp|P08760|KAD3_BOVIN GTP:AM	gi|163528	1	642	89	94	HSKJC32
387	HOEAZ62R	GTP_binding protein [Sus scrofa] >sp|Q29222|Q29222 GTP_BINDING PROTEIN (FRAGMENT). Length = 92	gi|971836	2	100	89	92	HOEAZ62

388	HAOAG76R	guanine nucleotide-binding protein G-s-alpha-4 [Homo sapiens] >gi|31913 alpha-S1 (AA 1-380) [Homo sapiens] >pir|C31927|RGHUA1 GTP-binding regulatory protein Gs alpha chain (adenylate cyclase-stimulating), splice form 4 - human Length = 380	gi|386746	1	369	86	86	HAOAG76
389	HCIAD45R	guanylin [Homo sapiens] >gi|306824 guanylin [Homo sapiens] >pir|A46279|A46279 guanylin precursor - human >sp|Q02747|GUAN_HUMAN GUANYLIN PRECURSOR (GUANYLATE CYCLASE ACTIVATOR 2A). Length = 115	gi|183415	2	262	75	81	HCIAD45
390	H2MAC82R	H+-ATP synthase subunit b [Homo sapiens] >pir|JQ1144|JQ1144 H+-transporting ATP synthase (EC 3.6.1.34) chain b precursor, mitochondrial - human >sp|P24539|ATPF_HUMAN ATP SYNTHASE B CHAIN, MITOCHONDRIAL PRECURSOR (EC 3.6.1.34). Length = 256	gi|509291	214	513	95	96	H2MAC82
391	H2LAJ41R	heat shock protein [Homo sapiens] >pir|A32319|HHHU86 heat shock protein 90-alpha - human >gi|184419 heat shock protein 86 [Homo sapiens] {SUB 1-312} >gnl|PID|d1014121 heat shock protein 90 [Homo sapiens] {SUB 582-732} Length = 732	gi|703087	75	632	98	98	H2LAJ41
392	HWLGH40R	HKL1 [Homo sapiens] >sp|O60765|O60765 HKL1. Length = 605	gnl|PID|d1026110	1	597	92	93	HWLGH40

393	HBJFH33R	HLA DP4 beta-chain [Homo sapiens] >gi|296648 pot. hla-dp-beta 1 [Homo sapiens] >pir|A02229|HLHUPB MHC class II histocompatibility antigen HLA-DP beta 1 chain (allele DPB4.1) precursor - human >sp|P04440|HB2P_HUMAN HLA CLASS II HISTOCOMPATIBILITY ANTIGEN,	gi|306858	97	369	88	92	HBJFH33
394	HISDV92R	homeobox c1 protein [Homo sapiens] >sp|Q64081|Q64081 HOX-B|HOX-2 {CLONE 17A}. {SUB 137-196} Length = 217	gi|306878	51	404	72	72	HISDV92
395	HMQCG89R			158	388			HMQCG89
396	HE9QB35R	Hox5.4 gene product (AA 1-95) [Homo sapiens] >pir|B32830|B32830 homeotic protein Hox D8 - human (fragment) >sp|P13378|HXD8_HUMAN HOMEOBOX PROTEIN HOX-D8 (HOX-4E) (HOX-5.4) (FRAGMENT). Length = 95	gi|32400	1	345	100	100	HE9QB35
397	HDABQ50R	hsOrc2p [Homo sapiens] >sp|Q13416|ORC2_HUMAN ORIGIN RECOGNITION COMPLEX PROTEIN, SUBUNIT 2. Length = 577	gi|1113107	204	368	91	91	HDABQ50

398	HNTEG83R	hydroxymethylglutaryl-CoA lyase [Homo sapiens] >pir|A45470|A45470 hydroxymethylglutaryl-CoA lyase (EC 4.1.3.4) - human >sp|P35914|HMGL_HUMAN HYDROXYMETHYLGLUTARYL-COA LYASE PRECURSOR (EC 4.1.3.4) (HMG-COA LYASE) (HL) (3-HYDROXY-3-METHYLGLUTARATE-COA LYASE	gi|184503	2	391	83	83	HNTEG83
399	HFVHM90R	hydroxymethylglutaryl-CoA synthase [Homo sapiens] >gi|2463646 3-hydroxy-3-methylglutaryl CoA synthase [Homo sapiens] >pir|S71623|S71623 hydroxymethylglutaryl-CoA synthase (EC 4.1.3.5) precursor, mitochondrial - human >sp|P54868|HMCM_HUMAN HYDROXYMETHYLGLU	gi|619877	2	319	92	94	HFVHM90
400	HOSNF90R	hypothetical 18K protein (rRNA) - goldfish mitochondrion (SGC1) Length = 166	pir|JC1348|JC1348	257	340	59	62	HOSNF90
401	HSDJE56R	hypothetical 18K protein (rRNA) - goldfish mitochondrion (SGC1) Length = 166	pir|JC1348|JC1348	2	70	67	73	HSDJE56
402	HWLGC87R	hypothetical protein 2 (rRNA external transcribed spacer) - mouse Length = 153	pir|S12206|S12206	1	135	96	96	HWLGC87

<table>
<tr><td>403</td><td>HTPAC28R</td><td>I-plastin [Homo sapiens] >pir|A56536|A56536 plastin, intestine-specific - human >sp|Q14651|PLSI_HUMAN I-PLASTIN (INTESTINE-SPECIFIC PLASTIN). Length = 629</td><td>gi|405230</td><td>68</td><td>325</td><td>92</td><td>93</td><td>HTPAC28</td></tr>
<tr><td>404</td><td>HMCGN07R</td><td>ICK=INTRON-CONTAINING KALLIKREIN {ALTERNATIVELY SPLICED, INTRON 2}. Length = 216</td><td>sp|G998972|G998972</td><td>1</td><td>498</td><td>98</td><td>99</td><td>HMCGN07</td></tr>
<tr><td>405</td><td>HFIBV16R</td><td>Id1 gene product [Homo sapiens] >pir|S47524|S47524 gene Id1 protein - human Length = 154</td><td>gi|457785</td><td>2</td><td>238</td><td>89</td><td>89</td><td>HFIBV16</td></tr>
<tr><td>406</td><td>HBMTT01R</td><td>Ig alpha-2 chain C region (allotype A2m(1)) - human >sp|P01877|ALC2_HUMAN IG ALPHA-2 CHAIN C REGION. >gi|184761 Ig alpha-2 H-chain constant region (aa at 166) [Homo sapiens] {SUB 2-340} Length = 340</td><td>pir|B22360|B22360</td><td>2</td><td>154</td><td>80</td><td>80</td><td>HBMTT01</td></tr>
<tr><td>407</td><td>HBMVM66R</td><td>Ig gamma chain C region - chimpanzee >gnl|PID|e40518 CH2 domain of IgG [Pan troglodytes] {SUB 25-134} >gnl|PID|e40517 CH3 domain of IgG [Pan troglodytes] {SUB 135-234} Length = 234</td><td>pir|PT0207|PT0207</td><td>148</td><td>435</td><td>70</td><td>77</td><td>HBMVM66</td></tr>
<tr><td>408</td><td>HABGC21R</td><td>Ig heavy chain (DOT) - human (fragment) >gnl|PID|e4381 reading frame CH1 [Homo sapiens] {SUB 121-218} Length = 241</td><td>pir|S69131|S69131</td><td>1</td><td>228</td><td>50</td><td>56</td><td>HABGC21</td></tr>
<tr><td>409</td><td>HWLGE72R</td><td>Ig kappa light chain (VJ) [Homo sapiens] >pir|S40343|S40343 Ig kappa chain V-J region - human Length = 128</td><td>gi|441375</td><td>11</td><td>421</td><td>75</td><td>79</td><td>HWLGE72</td></tr>
</table>

410	HLIBX69R	IgM B-cell receptor associated protein (BAP) 37 [Mus musculus] >pir|S46996|S46996 B-cell receptor-associated protein BAP37 - mouse >sp|Q61336|Q61336 BCR-ASSOCIATED PROTEIN 37 (IGM B-CELL RECEPTOR ASSOCIATED PROTEIN 37) (BAP). Length = 298	gi|541734	1	279	100	100	HLIBX69
411	HWAFW14R	immunoglobulin from VH4 family [Homo sapiens] >pir|S13519|S13519 Ig heavy chain V region precursor - human >gi|553385 immunoglobulin heavy chain [Homo sapiens] {SUB 24-125} Length = 147	gi|37725	2	139	94	100	HWAFW14
412	HWAFK04R	immunoglobulin heavy chain [Homo sapiens] >pir|E36005|E36005 Ig heavy chain V region (M72) - human {SUB 36-157} Length = 157	gi|567126	48	473	78	86	HWAFK04
413	HEPNA09R	immunoglobulin heavy chain [Homo sapiens] >pir|G36005|G36005 Ig heavy chain V region (M74) - human {SUB 38-158} Length = 158	gi|567127	3	206	81	87	HEPNA09
414	HCRQD03R	immunoglobulin heavy chain [Homo sapiens] Length = 152	gi|567128	1	573	76	82	HCRQD03
415	HAPSK08R	immunoglobulin heavy chain variable region [Homo sapiens] >gi|903667 Ig heavy chain variable region VH [Homo sapiens] {SUB 1-97} >gi|976311 This CDS feature is included to show the translation of the corresponding V_segment. Presently translation qualifie	gi|1791017	1	363	79	81	HAPSK08

416	HBMTS11R	immunoglobulin IgH heavy chain Fd fragment [Homo sapiens] Length = 221	gi|468237	1	375	68	70	HBMTS11
417	HCNDR62R	immunoglobulin kappa light chain [Homo sapiens] >pir|A37927|A37927 Ig kappa chain C region (allotype Inv(1,2)) - human (fragment) {SUB 138-236} Length = 236	gnl|PID|e224083	245	337	100	100	HCNDR62
418	HNJBF13R	immunoglobulin lambda light chain gene product [Homo sapiens] >pir|S25738|S25738 Ig lambda chain - human Length = 231	gi|33702	3	308	90	93	HNJBF13
419	HLYCD69R	immunoglobulin lambda light chain gene product [Homo sapiens] >pir|S25743|S25743 Ig lambda chain - human (fragment) Length = 145	gi|33712	2	481	86	89	HLYCD69
420	HWAFK89R	immunoglobulin lambda light chain gene product [Homo sapiens] >pir|S25750|S25750 Ig lambda chain - human Length = 235	gi|33730	2	460	87	92	HWAFK89
421	HWCAA53R	immunoglobulin light chain variable region [Homo sapiens] >gi|3142470 (AF063703) immunoglobulin lambda light chain variable region [Homo sapiens] {SUB 20-127} >gi|575243 immunoglobulin lambda chain precursor [Homo sapiens] {SUB 26-127} >gnl|PID|d1020826 V	gi|465170	1	342	74	88	HWCAA53
422	HYAAY47R	immunoglobulin light chain variable region [Homo sapiens] Length = 154	gi|465168	2	292	70	74	HYAAY47
423	HMCJF14R			21	596			HMCJF14
424	HE8QU88R			13	141			HE8QU88

425	HFVGP11R	L-FABP [Homo sapiens] >pir|A22289|FZHUL fatty acid-binding protein, hepatic - human >sp|P07148|FABL_HUMAN FATTY ACID-BINDING PROTEIN, LIVER (L-FABP). Length = 127	gi|182358	29	322	98	98	HFVGP11
426	HWLQH07R			3	554			HWLQH07
427	HSIGN24R	lrp gene product [Homo sapiens] >pir|S57723|S57723 lrp protein - human >sp|Q14764|MVP_HUMAN MAJOR VAULT PROTEIN (MVP) (LUNG RESISTANCE-RELATED PROTEIN). Length = 896	gi|895840	2	250	89	93	HSIGN24
428	HWLKH07R	lysophosphatidic acid acyltransferase-beta [Homo sapiens] Length = 278	gi|2155240	74	298	96	97	HWLKH07
429	HAPQC14R	macrophage capping protein [Homo sapiens] >pir|A43358|A43358 macrophage capping protein - human >sp|P40121|CAPG_HUMAN MACROPHAGE CAPPING PROTEIN (ACTIN-REGULATORY PROTEIN CAP-G). >gi|515505 Cap-G [Homo sapiens] {SUB 1-172} Length = 348	gi|187456	2	538	96	98	HAPQC14
430	HSODB48R	malonyl-CoA decarboxylase (EC 4.1.1.9) - goose >gi|305323 malonyl CoA decarboxylase [Anser anser] {SUB 33-462} Length = 462	pir|A33313|A33313	32	466	77	81	HSODB48
431	HBEAC75R	membrane glycoprotein [Homo sapiens] Length = 385	gi|307132	2	217	73	79	HBEAC75
432	HBGMJ24R	mitochondrial RNA polymerase [Homo sapiens] Length = 1230	gi|2114396	3	479	100	100	HBGMJ24

433	HBJEN94R	mitotic kinase-like protein-1 [Homo sapiens] >pir|S28262|S28262 kinesin-related protein MKLP-1 - human >sp|Q02241|MKLP_HUMAN MITOTIC KINESIN-LIKE PROTEIN-1. Length = 960	gi|34672	1	327	89	89	HBJEN94
434	HCIAE73R	motor protein [Homo sapiens] Length = 721	gnl|PID|d1005183	73	324	100	100	HCIAE73
435	HCNDN88R	mucin 2 precursor, intestinal - human (fragments) >gi|186396 mucin [Homo sapiens] {SUB 626-1895} >gi|186398 MUC2 [Homo sapiens] {SUB 2037-3020} >gi|188874 intestinal mucin [Homo sapiens] {SUB 1916-2193} >gi|188615 mucin-like protein [Homo sapiens] {SUB 23	pir|A49963|A43932	1	171	95	97	HCNDN88
436	HSIDX70R	N-benzoyl-L-tyrosyl-p-amino-benzoic acid hydrolase alpha subunit [Homo sapiens] >pir|S60193|HYHUMA meprin A (EC 3.4.24.18) alpha chain precursor - human >sp|Q16819|MEPA_HUMAN MEPRIN A ALPHA-SUBUNIT PRECURSOR (EC 3.4.24.18) (ENDOPEPTIDASE-2) (N- BENZOYL-L-	gi|535475	2	253	94	94	HSIDX70

437	HLWBC39R	Na+/H+ exchanger NHE-1 isoform [human, heart, Peptide, 815 aa] [Homo sapiens] >pir|I57487|I57487 Na+/H+-exchanging protein NHE-1 - human >sp|P19634|NAH1_HUMAN SODIUM/HYDROGEN EXCHANGER 1 (NA(+)/H(+) EXCHANGER 1) (NHE-1) (NA+/H+ ANTIPORTER, AMILORIDE-SENSI	bbs|143522	2	388	77	77	HLWBC39
438	HWLAA06R	NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain 4 - chimpanzee mitochondrion (SGC1) (fragment) >sp|P03906|NU4M_PANTR NADH-UBIQUINONE OXIDOREDUCTASE CHAIN 4 (EC 1.6.5.3) (FRAGMENT). Length = 152	pir|A00435|A00435	66	194	86	97	HWLAA06
439	HASCH25R	NADH-UBIQUINONE OXIDOREDUCTASE 39 KD SUBUNIT PRECURSOR (EC 1.6.5.3) (EC 1.6.99.3) (COMPLEX I-39KD) (CI-39KD). >gi|189049 NADH dehydrogenase (ubiquinone) [Homo sapiens] {SUB 3-377} Length = 377	sp|Q16795|NUEM_HUMAN	57	143	78	82	HASCH25
440	HLQGB87R	NADPH--ferrihemoprotein reductase (EC 1.6.2.4) - human >sp|P16435|NCPR_HUMAN NADPH-CYTOCHROME P450 REDUCTASE (EC 1.6.2.4) (CPR). {SUB 2-677} Length = 677	pir|A33421|A60557	1	411	92	93	HLQGB87

441	HFDMD17R	neutrophil gelatinase associated lipocalin [Homo sapiens] >sp|P80188|NGAL_HUMAN NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN PRECURSOR (NGAL) (P25) (25 KD ALPHA-2-MICROGLOBULIN-RELATED SUBUNIT OF MMP-9) (LIPOCALIN-2) (ONCOGENE 24P3). Length = 198	gi|929657	1	621	74	78	HFDMD17
442	HAOAC69R	nuclear autoantigen [Homo sapiens] >pir|A37244|A37244 nuclear autoantigen Sp-100 - human Length = 480	gi|178689	3	209	88	88	HAOAC69
443	HWLEQ08R	Nuclear localization signal at AA 569-573, 576-580, 579-583; acidic transcr. activ. domain 620-640.; homeobox motif 653-676 [Homo sapiens] >pir|A47456|A47456 down-regulated in adenoma (DRA) - human >sp|P40879|DRA_HUMAN DRA PROTEIN (DOWN-REGULATED IN ADENO	gi|291964	191	364	75	84	HWLEQ08
444	HKAAV70R	nucleic acid binding protein [Homo sapiens] >pir|I38191|I38191 nucleic acid binding protein - human (fragment) >sp|Q15410|Q15410 NUCLEIC ACID BINDING PROTEIN (FRAGMENT). Length = 163	gi|431953	1	432	73	73	HKAAV70

445	HOCTB64R	ORIGINAL PIGR [unidentified] >gi|456346 Polymeric immunoglobulin receptor [Homo sapiens] >bbs|62408 transmembrane secretory component, poly-Ig receptor, SC [human, colonic adenocarcinoma cell line, Peptide, 764 aa] [Homo sapiens] >bbs|113253 transmembrane	gnl|PID|e307278	3	212	85	90	HOCTB64
446	HOFNB62R	ornithine decarboxylase [Bos taurus] >gi|163449 ornithine decarboxylase [Bos taurus] >sp|P27117|DCOR_BOVIN ORNITHINE DECARBOXYLASE (EC 4.1.1.17) (ODC). >gi|604513 ornithine decarboxylase [Bos taurus] {SUB 1-34} Length = 461	gi|1036793	1	312	85	90	HOFNB62
447	HAUAU04R	p22 phagocyte b-cytochrome [Homo sapiens] >pir|A28201|A28201 cytochrome b-245 alpha chain - human >sp|P13498|C24A_HUMAN CYTOCHROME B-245 LIGHT CHAIN (P22 PHAGOCYTE B-CYTOCHROME) (NEUTROPHIL CYTOCHROME B, 22 KD POLYPEPTIDE) (P22-PHOX) (CYTOCHROME B(558) AL	gi|189106	1	267	87	88	HAUAU04
448	HNFJE41R	p47-phox [Homo sapiens] >sp|O43842|O43842 P47-PHOX. Length = 390	gi|2754713	1	423	94	97	HNFJE41
449	HCFOH92R	phosphoprotein phosphatase (EC 3.1.3.16) catalytic beta chain - pig (fragment) Length = 293	pir|B27430|B27430	2	88	93	93	HCFOH92
450	HOUID53R	phosphorylation regulatory protein HP-10 - human Length = 492	pir|A61382|A61382	85	213	45	49	HOUID53

451	HCRMW41R	polypeptide BM28 [Homo sapiens] Length = 892	gi|468704	1	282	100	100	HCRMW41
452	HOVAX78R	porin [Homo sapiens] >pir|A45972|A45972 mitochondrial porin, long form - human >sp|P45880|POR2_HUMAN VOLTAGE-DEPENDENT ANION-SELECTIVE CHANNEL PROTEIN 2 (VDAC2) (OUTER MITOCHONDRIAL MEMBRANE PROTEIN PORIN). >gi|190201 porin [Homo sapiens] {SUB 27-347} Len	gi|190200	2	214	94	98	HOVAX78
453	HWAEH57R	precursor [Homo sapiens] >sp|P06314|KV4C_HUMAN IG KAPPA CHAIN PRECURSOR V-IV REGION (B17). Length = 134	gi|37910	1	462	91	93	HWAEH57
454	HHBHJ76R	presenilin I-463 [Homo sapiens] >pir|S63683|S63683 presenilin I-463 - human Length = 463	gi|1244638	1	303	98	98	HHBHJ76
455	HBJFA18R	prosomal P27K protein [Homo sapiens] >gnl|PID|d1002062 proteasome subunit R-IOTA [Rattus sp.] >pir|S30274|S30274 multicatalytic endopeptidase complex (EC 3.4.99.46) iota chain - human >pir|JX0230|JX0230 multicatalytic endopeptidase complex (EC 3.4.99.46)	gi|35682	178	402	79	83	HBJFA18
456	HCRNF16R	protein kinase [Homo sapiens] >sp|P51956|NEK3_HUMAN SERINE/THREONINE-PROTEIN KINASE NEK3 (EC 2.7.1.-) (NIMA-RELATED PROTEIN KINASE 3) (HSPK 36) (FRAGMENT). Length = 459	gi|479173	336	473	73	79	HCRNF16

457	HAHEK76R	putative surface glycoprotein [Homo sapiens] >sp|P53801|C211_HUMAN PUTATIVE SURFACE GLYCOPROTEIN C21ORF1 PRECURSOR (C21ORF3). Length = 180	gnl|PID|e188111	33	440	83	86	HAHEK76
458	HEOPT38R	renin-binding protein [Homo sapiens] >gi|1302662 renin-binding protein [Homo sapiens] >pir|JX0188|JX0188 renin-binding protein - human Length = 417	gnl|PID|d1001551	2	316	100	100	HEOPT38
459	HOSCG81R	ribonucleoprotein La [Homo sapiens] >sp|Q15367|Q15367 RIBONUCLEOPROTEIN (LA) (FRAGMENT). >gi|338496 SS-B/La protein [Homo sapiens] {SUB 121-171} Length = 355	gi|337457	1	297	96	96	HOSCG81
460	HTFMD43R	ribosomal protein L39 [Homo sapiens] >gnl|PID|d1012131 ribosomal protein L39 [Homo sapiens] >gi|575382 ribosomal protein L39 [Rattus norvegicus] >pir|JC4229|R6RT39 ribosomal protein L39 - rat >pir|G02654|G02654 ribosomal protein L39 - human Length = 51	gi|1373419	3	242	100	100	HTFMD43
461	HDTGQ68R	ribosomal protein L7a large subunit [Homo sapiens] >gi|34203 L7a protein [Homo sapiens] >gi|35512 PLA-X polypeptide [Homo sapiens] >gi|36647 ribosomal protein L7a [Homo sapiens] >gi|56956 ribosomal protein L7a (AA 1-266) [Rattus rattus] >pir|S19717|R5HU7A	gi|337495	43	291	100	100	HDTGQ68

462	H2LAR73R	ribosomal protein S15a [Rattus norvegicus] >pir|JC2234|JC2234 ribosomal protein S15a - rat Length = 130	gi|495273	23	505	100	100	H2LAR73
463	HAMFM26R	ribosomal protein S6 kinase 1 [Homo sapiens] >pir|I51901|I51901 ribosomal protein S6 kinase 2 - human >sp|Q15418|KS61_HUMAN RIBOSOMAL PROTEIN S6 KINASE II ALPHA 1 (EC 2.7.1.-) (S6KII-ALPHA 1) (P90-RSK 1) (RIBOSOMAL S6 KINASE 1) (RSK1) (PP90RSK1). Length =	gi|292457	3	458	97	97	HAMFM26
464	HBMTM61R	Rieske Fe-S protein [Homo sapiens] Length = 274	gi|488299	1	219	53	55	HBMTM61
465	HWHPK71R	RIP [Homo sapiens] >pir|I38992|I38992 receptor interacting protein RIP - human (fragment) Length = 372	gi|829617	198	320	56	64	HWHPK71
466	HWBBJ39R	Sec23 protein [Homo sapiens] Length = 767	gnl|PID|e236014	2	127	81	84	HWBBJ39
467	HSLJJ36R	selenium donor protein [Homo sapiens] Length = 383	gi|1000284	2	319	96	98	HSLJJ36
468	HSODD94R	selenoprotein P [Homo sapiens] Length = 381	gnl|PID|e1192260	2	232	61	70	HSODD94
469	HMIAG25R	serine kinase [Homo sapiens] >pir|S45337|S45337 serine protein kinase SRPK1 - human >sp|Q12890|Q12890 SERINE KINASE. Length = 655	gi|507213	1	330	82	82	HMIAG25
470	HWLEM94R	serine protease [Homo sapiens] Length = 492	gi|2507613	2	304	78	82	HWLEM94

471	HCNDW17R	Sm protein G [Homo sapiens] >pir|S55054|S55054 Sm protein G - human >sp|Q15357|Q15357 SM PROTEIN G. Length = 76	gi|806566	1	240	100	100	HCNDW17
472	HWLEY08R	SNAP23A protein [Homo sapiens] >gnl|PID|e1331767 (AJ011915) synaptosome associated protein of 23 kilodaltons, isoform A [Homo sapiens] >pir|JC5296|JC5296 vesicle-membrane fusion protein SNAP-23A - human >sp|O00161|O00161 VESICLE-MEMBRANE FUSION PROTEIN SN	gnl|PID|e290695	222	608	97	97	HWLEY08
473	HULFN68R	sorcin CP-22 [Homo sapiens] >gi|459836 sorcin [Homo sapiens] >pir|S52094|S52094 sorcin - human >gi|2772536 (AC003991) calcium binding protein amplified in mutlidrug-resistant cells [Homo sapiens] {SUB 1-68} Length = 198	gi|338482	2	409	88	91	HULFN68
474	HMEJD77R	SRp30c [Homo sapiens] >gnl|PID|e1248292 (AL021546) pre-mRNA splicing factor SRp30c [Homo sapiens] >gi|4099429 splicing factor SRp30c [Homo sapiens] >pir|S59075|S59075 splicing factor SRp30c - human >sp|G4099429|G4099429 SPLICING FACTOR SRP30C. Length = 22	gi|1049078	3	263	46	48	HMEJD77
475	HS2AD15R	stimulator of TAR RNA binding [Homo sapiens] Length = 539	gi|1200184	1	336	87	88	HS2AD15

476	HTEJJ32R	STM-7 [Homo sapiens] >sp|Q92749|Q92749 TYPE I PHOSPHATIDYLINOSITOL-4-PHOSPHATE 5-KINASE BETA (EC 2.7.1.68) (STM-7 PROTEIN). >gi|1743883 type I phosphatidylinositol-4-phosphate 5-kinase beta [Homo sapiens] {SUB 112-502} >gi|1743879 type I phosphatidylinosi	gnl|PID|e206448	3	341	100	100	HTEJJ32
477	HETIF46R	sulfate transporter [Homo sapiens] >sp|P50443|DTD_HUMAN SULFATE TRANSPORTER (DIASTROPHIC DYSPLASIA PROTEIN). Length = 739	gi|549988	1	228	71	71	HETIF46
478	H2CBS58R	thrombospondin 2 [Homo sapiens] >pir|A47379|TSHUP2 thrombospondin 2 precursor - human Length = 1172	gi|307506	3	455	96	97	H2CBS58
479	H2LAB77R	thymosin beta-4 precursor [Rattus norvegicus] >pir|I52084|I52084 thymosin beta-4 precursor - rat (fragment) >gi|339689 thymosin beta-4 [Homo sapiens] {SUB 13-56} >pir|A01521|TNBOB4 thymosin beta-4 - bovine {SUB 14-56} >gi|825683 open reading frame [Homo s	gi|207318	98	265	100	100	H2LAB77
480	HODAJ23R	tissue-specific secretory protein [unidentified] >gi|32051 HE4 protein [Homo sapiens] >pir|S25454|S25454 HE4 protein - human >sp|Q14508|EP4_HUMAN MAJOR EPIDIDYMIS-SPECIFIC PROTEIN E4 PRECURSOR (HE4) (EPIDIDYMAL SECRETORY PROTEIN E4). Length =	gi|583141	2	223	62	62	HODAJ23

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481	HWAFP88R	TRANSCRIPTION FACTOR BTF3 (RNA POLYMERASE B TRANSCRIPTION FACTOR 3). Length = 204	sp|Q64152|BTF3_ MOUSE	85	471	92	93	HWAFP88
482	HDTHI51R	transcription factor-like protein 4 - human Length = 298	pir|JC5333|JC5333	2	565	82	86	HDTHI51
483	HWMEB67R	tryptase-III [Homo sapiens] >sp|Q15664|Q15664 TRYPTASE-III (FRAGMENT). Length = 267	gi|339985	21	218	92	92	HWMEB67
484	HTXOU93R	tumor susceptibility protein [Homo sapiens] >sp|Q99816|Q99816 TUMOR SUSCEPTIBILITY PROTEIN. Length = 390	gi|3184258	2	439	100	100	HTXOU93
485	HANKB37R	ubiquitin [Plasmodium falciparum] >sp|Q26029|Q26029 UBIQUITIN. Length = 77	gi|552237	11	115	70	73	HANKB37
486	HWLHN38R	ubiquitin-conjugating enzyme [Mus musculus] >sp|O88738|O88738 UBIQUITIN-CONJUGATING ENZYME. Length = 4845	gnl|PID|e1311091	129	347	77	83	HWLHN38

487	HOSDZ35R	UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferas [Homo sapiens] >sp|Q14435|Q14435 POLYPEPTIDE N-ACETYLGALACTOSAMINYLTRANSFERASE (EC 2.4.1.41) (PROTEIN-UDP ACETYLGALACTOSAMINYLTRANSFERASE) (UDP-GALNAC:POLYPEPTIDE. N-ACETYLGALACTOSAMINYLTRANSFERASE)	gnl|PID|e209711	2	286	85	85	HOSDZ35
488	HKMAA52R	UDP-glucuronosyltransferase [Homo sapiens] >pir|A31340|A31340 glucuronosyltransferase (EC 2.4.1.17) UGT1A1 precursor - human >sp|G245274|G245274 PHENOL. TRANSFERASE=UGT1F PRODUCT. {SUB 1-286} >gi|2645491 (AF014112) phenol UDP-glucuronosyltransferase [Homo	gi|624725	3	284	98	98	HKMAA52
489	H2LAB37R			93	290			H2LAB37
490	H2LAP46R			206	568			H2LAP46
491	H6BSE61R			67	369			H6BSE61
492	H6EEE76R			149	277			H6EEE76
493	H6EEV26R			2	88			H6EEV26
494	HABAF88R			40	216			HABAF88
495	HABGD41R			1	147			HABGD41
496	HACBS75R			5	187			HACBS75
497	HACCA48R			5	91			HACCA48
498	HACCS19R			3	341			HACCS19
499	HADAB25R			1	261			HADAB25
500	HAGGL96R			3	347			HAGGL96

501	HAGGT37R	3	113	HAGGT37
502	HAHDR66R	27	347	HAHDR66
503	HAJCC53R	164	418	HAJCC53
504	HAJCL80R	3	122	HAJCL80
505	HANKF43R	372	566	HANKF43
506	HAPCM11R	69	152	HAPCM11
507	HAPNT66R	1	66	HAPNT66
508	HAQAG47R	2	148	HAQAG47
509	HAQBW58R	3	260	HAQBW58
510	HAQMH45R	91	363	HAQMH45
511	HAQMI94R	1	183	HAQMI94
512	HARNC74R	84	272	HARNC74
513	HATBA87R	98	202	HATBA87
514	HATBG77R	174	392	HATBG77
515	HBAGQ79R	1	231	HBAGQ79
516	HBCAN64R	2	82	HBCAN64
517	HBGCA44R	1	123	HBGCA44
518	HBGFX27R	3	281	HBGFX27
519	HBGMU38R	40	429	HBGMU38
520	HBJBO10R	1	93	HBJBO10
521	HBJCC53R	2	106	HBJCC53
522	HBJED55R	1	252	HBJED55
523	HBJGR39R	2	106	HBJGR39
524	HBJLU30R	39	344	HBJLU30
525	HBKEC78R	93	245	HBKEC78
526	HBMST81R	1	192	HBMST81
527	HBMTJ51R	150	323	HBMTJ51
528	HBMWF72R	1	111	HBMWF72
529	HBWBD78R	2	226	HBWBD78
530	HBXCU02R	2	79	HBXCU02
531	HCDAK65R	1	138	HCDAK65

532	HCDBM08R	130	339	HCDBM08
533	HCDCP10R	72	206	HCDCP10
534	HCDDQ63R	3	116	HCDDQ63
535	HCEEH05R	204	380	HCEEH05
536	HCEIQ92R	1	90	HCEIQ92
537	HCFCD01R	28	228	HCFCD01
538	HCFCR43R	64	360	HCFCR43
539	HCFLT83R	3	104	HCFLT83
540	HCHAO92R	193	342	HCHAO92
541	HCHOH49R	183	344	HCHOH49
542	HCHPG05R	365	616	HCHPG05
543	HCIAD24R	98	301	HCIAD24
544	HCNCA90R	380	532	HCNCA90
545	HCNCN80R	120	353	HCNCN80
546	HCNCY51R	184	267	HCNCY51
547	HCNCY63R	1	81	HCNCY63
548	HCNDO71R	1	213	HCNDO71
549	HCNDV83R	64	303	HCNDV83
550	HCNUB26R	119	289	HCNUB26
551	HCQBN22R	2	94	HCQBN22
552	HCQCL27R	116	235	HCQCL27
553	HCQCL48R	57	251	HCQCL48
554	HCQCL96R	287	430	HCQCL96
555	HCQDC74R	145	360	HCQDC74
556	HCQDH94R	20	76	HCQDH94
557	HCQDJ42R	149	388	HCQDJ42
558	HCRMD77R	3	185	HCRMD77
559	HCRME02R	3	293	HCRME02
560	HCRMX88R	3	284	HCRMX88
561	HCRNA70R	40	204	HCRNA70
562	HCRNP66R	3	431	HCRNP66

563	HCRNX32R	2	196	HCRNX32
564	HCROH25R	3	128	HCROH25
565	HCROJ05R	66	170	HCROJ05
566	HCROJ68R	3	239	HCROJ68
567	HCROK68R	2	208	HCROK68
568	HCROK94R	1	210	HCROK94
569	HCROM30R	3	365	HCROM30
570	HCROQ34R	29	136	HCROQ34
571	HCROQ54R	3	98	HCROQ54
572	HCROZ66R	239	427	HCROZ66
573	HCRPC61R	3	194	HCRPC61
574	HCRPG28R	95	229	HCRPG28
575	HCRPL80R	59	235	HCRPL80
576	HCRPN52R	3	191	HCRPN52
577	HCRPS40R	208	321	HCRPS40
578	HCRPV74R	179	409	HCRPV74
579	HCRQC89R	2	85	HCRQC89
580	HCWDS78R	322	558	HCWDS78
581	HDCAA21R	1	120	HDCAA21
582	HDDAA85R	139	258	HDDAA85
583	HDPGO03R	110	352	HDPGO03
584	HDPLB08R	142	360	HDPLB08
585	HDQDB15R	220	417	HDQDB15
586	HDQEX80R	274	492	HDQEX80
587	HDRMI91R	3	116	HDRMI91
588	HDTJO85R	36	197	HDTJO85
589	HDTMJ22R	192	608	HDTMJ22
590	HE6CS28R	40	213	HE6CS28
591	HE6DJ45R	2	64	HE6DJ45
592	HE7TJ40R	62	268	HE7TJ40
593	HE9FH12R	182	307	HE9FH12

594	HE9HJ57R	3	74	HE9HJ57
595	HE9QH08R	360	596	HE9QH08
596	HE9TC50R	198	425	HE9TC50
597	HEAAL59R	1	150	HEAAL59
598	HEGAR32R	448	675	HEGAR32
599	HEGAR85R	361	534	HEGAR85
600	HELFE05R	32	187	HELFE05
601	HEMFI88R	26	343	HEMFI88
602	HEMFR18R	83	397	HEMFR18
603	HEONL43R	2	76	HEONL43
604	HESAC53R	3	116	HESAC53
605	HETJB05R	1	138	HETJB05
606	HETJC36R	1	102	HETJC36
607	HFADM62R	1	78	HFADM62
608	HFATE31R	2	361	HFATE31
609	HFATZ30R	3	152	HFATZ30
610	HFCEL77R	3	278	HFCEL77
611	HFEBN43R	174	491	HFEBN43
612	HFGAF10R	272	469	HFGAF10
613	HFIEC01R	1	144	HFIEC01
614	HFIIR75R	317	427	HFIIR75
615	HFIUB90R	2	124	HFIUB90
616	HFIUM71R	37	159	HFIUM71
617	HFOXL53R	1	117	HFOXL53
618	HFPBO66R	196	408	HFPBO66
619	HFTBI57R	47	220	HFTBI57
620	HFTCC22R	1	126	HFTCC22
621	HFXGX46R	1	114	HFXGX46
622	HGAME72R	2	199	HGAME72
623	HGBCS53R	142	279	HGBCS53
624	HGBHP81R	87	221	HGBHP81

625	HGCOX03R	323	511	HGCOX03
626	HHBES92R	349	483	HHBES92
627	HHBEW72R	13	219	HHBEW72
628	HHERT59R	2	88	HHERT59
629	HHMMD64R	31	252	HHMMD64
630	HHSGT13R	428	619	HHSGT13
631	HISED82R	1	126	HISED82
632	HJMAH76R	2	253	HJMAH76
633	HJMAN56R	1	180	HJMAN56
634	HJMAO54R	1	291	HJMAO54
635	HKDAD56R	2	109	HKDAD56
636	HKLSD93R	89	298	HKLSD93
637	HLMFH16R	1	447	HLMFH16
638	HLQBD52R	1	195	HLQBD52
639	HLQCQ73R	3	350	HLQCQ73
640	HLQEF47R	348	503	HLQEF47
641	HLQFM50R	136	291	HLQFM50
642	HLQFY61R	411	575	HLQFY61
643	HLQGA76R	210	404	HLQGA76
644	HLQGE53R	1	66	HLQGE53
645	HLTEV09R	210	371	HLTEV09
646	HLXNE63R	142	258	HLXNE63
647	HLXTF64R	2	136	HLXTF64
648	HMACF85R	23	430	HMACF85
649	HMAIA15R	108	452	HMAIA15
650	HMCHZ07R	247	402	HMCHZ07
651	HMCIS54R	84	242	HMCIS54
652	HMSFW88R	1	69	HMSFW88
653	HMSMW71R	290	514	HMSMW71
654	HNHMR05R	77	598	HNHMR05
655	HNJBB78R	91	282	HNJBB78

656	HNTMA96R	3	362	HNTMA96
657	HNTRL32R	130	291	HNTRL32
658	HNTST76R	2	397	HNTST76
659	HOCNC55R	67	156	HOCNC55
660	HOCND06R	147	275	HOCND06
661	HOCND49R	133	273	HOCND49
662	HODEH30R	2	154	HODEH30
663	HODFA26R	263	550	HODFA26
664	HODHL89R	106	279	HODHL89
665	HOEJM67R	2	364	HOEJM67
666	HOGBN48R	147	380	HOGBN48
667	HOHCX95R	2	364	HOHCX95
668	HORBP43R	3	365	HORBP43
669	HOUHN53R	235	345	HOUHN53
670	HOUIE10R	72	254	HOUIE10
671	HPBEE63R	107	211	HPBEE63
672	HPEBO20R	1	237	HPEBO20
673	HPJBE91R	1	312	HPJBE91
674	HPTRW82R	32	133	HPTRW82
675	HPWDC51R	33	272	HPWDC51
676	HPWDK52R	1	330	HPWDK52
677	HRDBJ82R	2	334	HRDBJ82
678	HRODH93R	2	121	HRODH93
679	HS2AD53R	1	120	HS2AD53
680	HSATR92R	3	203	HSATR92
681	HSDZG83R	5	136	HSDZG83
682	HSICQ60R	2	118	HSICQ60
683	HSIFA64R	3	449	HSIFA64
684	HSKNN36R	108	527	HSKNN36
685	HSKYE52R	2	124	HSKYE52
686	HSLJA55R	2	169	HSLJA55

687	HSODA95R	2	169	HSODA95
688	HSPBS19R	1	372	HSPBS19
689	HSSGK43R	3	155	HSSGK43
690	HSXFJ91R	3	242	HSXFJ91
691	HTEMB57R	168	410	HTEMB57
692	HTGBR05R	37	138	HTGBR05
693	HTLGA72R	3	455	HTLGA72
694	HTLIX61R	1	102	HTLIX61
695	HTNTF25R	307	426	HTNTF25
696	HTWCP79R	91	180	HTWCP79
697	HTXFA64R	3	263	HTXFA64
698	HUSJF91R	218	412	HUSJF91
699	HUSJN48R	259	462	HUSJN48
700	HUSJX68R	98	493	HUSJX68
701	HUSZN23R	36	131	HUSZN23
702	HUTSD20R	104	256	HUTSD20
703	HWACH10R	66	275	HWACH10
704	HWAFI63R	3	272	HWAFI63
705	HWAGZ89R	176	385	HWAGZ89
706	HWBAQ20R	1	177	HWBAQ20
707	HWHHM83R	2	298	HWHHM83
708	HWLAC24R	11	133	HWLAC24
709	HWLAC81R	64	360	HWLAC81
710	HWLBF27R	3	149	HWLBF27
711	HWLBS90R	195	347	HWLBS90
712	HWLCU10R	55	120	HWLCU10
713	HWLEH13R	2	379	HWLEH13
714	HWLEJ67R	375	527	HWLEJ67
715	HWLEM49R	244	354	HWLEM49
716	HWLFP27R	2	79	HWLFP27
717	HWLGG20R	92	208	HWLGG20

718	HWLGK22R	209	373	HWLGK22
719	HWLGM21R	244	354	HWLGM21
720	HWLGP37R	8	181	HWLGP37
721	HWLGS46R	40	324	HWLGS46
722	HWLGU40R	2	202	HWLGU40
723	HWLGX65R	3	230	HWLGX65
724	HWLHD09R	2	310	HWLHD09
725	HWLHD50R	3	98	HWLHD50
726	HWLHM40R	2	208	HWLHM40
727	HWLHW89R	56	382	HWLHW89
728	HWLID17R	64	276	HWLID17
729	HWLIM20R	3	158	HWLIM20
730	HWLJA26R	34	135	HWLJA26
731	HWLJA28R	1	108	HWLJA28
732	HWLJG57R	240	404	HWLJG57
733	HWLJL19R	119	292	HWLJL19
734	HWLJP50R	1	147	HWLJP50
735	HWLKG82R	1	360	HWLKG82
736	HWLKG95R	1	300	HWLKG95
737	HWLKI53R	1	144	HWLKI53
738	HWLKM09R	2	100	HWLKM09
739	HWLKM86R	44	226	HWLKM86
740	HWLKM95R	2	184	HWLKM95
741	HWLKU25R	3	137	HWLKU25
742	HWLQS83R	1	117	HWLQS83
743	HWLQU65R	361	558	HWLQU65
744	HWLRL59R	1	225	HWLRL59
745	HWLRP86R	2	253	HWLRP86
746	HWLRQ49R	3	158	HWLRQ49
747	HWLUF60R	84	218	HWLUF60
748	HWLUI37R	51	263	HWLUI37

749	HWLUR41R			33	155			HWLUR41
750	HWLVD60R			1	174			HWLVD60
751	HWLVV50R			1	72			HWLVV50
752	HWMAN61R			3	107			HWMAN61
753	HWMEB47R			87	185			HWMEB47
754	HWMEH13R			2	256			HWMEH13
755	HWMEH26R			168	341			HWMEH26
756	HWMEL50R			131	400			HWMEL50
757	HWMFB31R			100	285			HWMFB31
758	HWMFL66R			61	153			HWMFL66
759	HWMFO93R			2	79			HWMFO93
760	HWMFP01R			120	284			HWMFP01
761	HZAAD81R			1	144			HZAAD81
762	HWLHN70R			2	160			HWLHN70
763	HFIXK57R	URF 3 (NADH dehydrogenase subunit) [Homo sapiens] >gi|506832 protein 3 [Homo sapiens] >pir|A00422|DNHUN3 NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain 3 - human mitochondrion (SGC1) >sp|P03897|NU3M_HUMAN NADH-UBIQUINONE OXIDOREDUCTASE CHAIN 3 (EC 1.6	gi|13011	2	211	90	97	HFIXK57
764	HMAFE48R	URF 3 (NADH dehydrogenase subunit) [Homo sapiens] >gi|506832 protein 3 [Homo sapiens] >pir|A00422|DNHUN3 NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain 3 - human mitochondrion (SGC1) >sp|P03897|NU3M_HUMAN NADH-UBIQUINONE OXIDOREDUCTASE CHAIN 3 (EC 1.6	gi|13011	47	205	90	100	HMAFE48

765	HRODJ88R	URF 3 (NADH dehydrogenase subunit) [Homo sapiens] >gi|506832 protein 3 [Homo sapiens] >pir|A00422|DNHUN3 NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain 3 - human mitochondrion (SGC1) >sp|P03897|NU3M_HUMAN NADH-UBIQUINONE OXIDOREDUCTASE CHAIN 3 (EC 1.6	gi|13011	55	213	83	94	HRODJ88
766	HWLAR31R	URF 3 (NADH dehydrogenase subunit) [Homo sapiens] >gi|506832 protein 3 [Homo sapiens] >pir|A00422|DNHUN3 NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain 3 - human mitochondrion (SGC1) >sp|P03897|NU3M_HUMAN NADH-UBIQUINONE OXIDOREDUCTASE CHAIN 3 (EC 1.6	gi|13011	56	214	91	100	HWLAR31
767	HNHLH26R	v-SNARE [Cricetulus griseus] >sp|O08522|O08522 V-SNARE. Length = 250	gi|1912453	73	243	64	76	HNHLH26
768	H2LAU24R	weakly similar to gastrula zinc finger protein [Caenorhabditis elegans] >sp|Q09998|Q09998 PUTATIVE 55.5 KD ZINC FINGER PROTEIN R144.3 IN CHROMOSOME III. Length = 492	gi|746495	78	488	45	60	H2LAU24
769	HATDR94R	X box binding protein-1 [Homo sapiens] >pir|A36299|A36299 transcription factor hXBP-1 - human Length = 260	gi|306893	2	367	95	100	HATDR94
770	HWLLI85R	X-linked deafness dystonia protein [Homo sapiens] >sp|O60220|O60220 X-LINKED DEAFNESS DYSTONIA PROTEIN. Length = 97	gi|3123843	410	580	60	80	HWLLI85

<table>
<tr><td>771</td><td>HBHMF67R</td><td>XP-C repair complementing protein (p58/HHR23B) [Homo sapiens] >pir|S44346|S44346 RAD23 protein homolog - human Length = 409</td><td>gnl|PID|d1005181</td><td>3</td><td>191</td><td>96</td><td>96</td><td>HBHMF67</td></tr>
<tr><td>772</td><td>HSYCH41R</td><td>yeast methionyl-tRNA synthetase homolog [Homo sapiens] >pir|JC5224|JC5224 methionine--tRNA ligase (EC 6.1.1.10) - human >gi|804996 mitoxantrone-resistance associated gene [Homo sapiens] {SUB 423-900} Length = 900</td><td>gnl|PID|e218477</td><td>2</td><td>373</td><td>90</td><td>90</td><td>HSYCH41</td></tr>
<tr><td>773</td><td>HWLJR53R</td><td>zinc finger protein PZF [Mus musculus] >pir|I48724|I48724 zinc finger protein PZF - mouse >sp|Q62511|Q62511 ZINC FINGER PROTEIN PZF. Length = 455</td><td>gi|453376</td><td>1</td><td>552</td><td>81</td><td>83</td><td>HWLJR53</td></tr>
</table>

The first column of Table 1 shows the "SEQ ID NO:" for each of the 773 colon cancer antigen polynucleotide sequences of the invention.

The second column in Table 1, provides a unique "Sequence/Contig ID" identification for each colon and/or colon cancer associated sequence. The third column in Table 1. "Gene Name," provides a putative identification of the gene based on the sequence similarity of its translation product to an amino acid sequence found in a publicly accessible gene database, such as GenBank (NCBI). The great majority of the cDNA sequences reported in Table 1 are unrelated to any sequences previously described in the literature. The fourth column, in Table 1, "Overlap," provides the database accession no. for the database sequence having similarity. The fifth and sixth columns in Table 1 provide the location (nucleotide position nos. within the contig), "Start" and "End", in the polynucleotide sequence "SEQ ID NO:X" that delineate the preferred ORF shown in the sequence listing as SEQ ID NO:Y. In one embodiment, the invention provides a protein comprising, or alternatively consisting of, a polypeptide encoded by the portion of SEQ ID NO:X delineated by the nucleotide position nos. "Start" and "End". Also provided are polynucleotides encoding such proteins and the complementary strand thereto. The seventh and eighth columns provide the "% Identity" (percent identity) and "% Similarity" (percent similarity) observed between the aligned sequence segments of the translation product of SEQ ID NO:X and the database sequence.

The ninth column of Table 1 provides a unique "Clone ID" for a clone related to each contig sequence. This clone ID references the cDNA clone which contains at least the 5' most sequence of the assembled contig and at least a portion of SEQ ID NO:X was determined by directly sequencing the referenced clone. The reference clone may have more sequence than described in the sequence listing or the clone may have less. In the vast majority of cases, however, the clone is believed to encode a full-length polypeptide. In the case where a clone is not full-length, a full-length cDNA can be obtained by methods described elsewhere herein.

Table 3 indicates public ESTs, of which at least one, two, three, four, five, ten, or more of any one or more of these public ESTs are optionally excluded from the invention.

SEQ ID NO:X (where X may be any of the polynucleotide sequences disclosed in the sequence listing as SEQ ID NO:1 through SEQ ID NO:773) and the translated SEQ ID NO:Y (where Y may be any of the polypeptide sequences disclosed in the sequence listing as SEQ ID NO:774 through SEQ ID NO:1546) are sufficiently accurate and otherwise suitable for a

variety of uses well known in the art and described further below. For instance, SEQ ID NO:X has uses including, but not limited to, in designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the related cDNA clone contained in a library deposited with the ATCC. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling immediate applications in chromosome mapping, linkage analysis, tissue identification and/or typing, and a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y have uses that include, but are not limited to, generating antibodies which bind specifically to the colon cancer antigen polypeptides, or fragments thereof, and/or to the colon cancer antigen polypeptides encoded by the cDNA clones identified in Table 1.

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, the predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing the related cDNA clone (deposited with the ATCC, as set forth in Table 1). The nucleotide sequence of each deposited clone can readily be determined by sequencing the deposited clone in accordance with known methods. Further, techniques known in the art can be used to verify the nucleotide sequences of SEQ ID NO:X.

The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular clone can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

The present invention also relates to vectors or plasmids which include such DNA sequences, as well as the use of the DNA sequences. The material deposited with the ATCC on:

Table 2

ATCC Deposits	Deposit Date	ATCC Designation Number
LP01, LP02, LP03, LP04, LP05, LP06, LP07, LP08, LP09, LP10, LP11,	May-20-97	209059, 209060, 209061, 209062, 209063, 209064, 209065, 209066, 209067, 209068, 209069
LP12	Jan-12-98	209579
LP13	Jan-12-98	209578
LP14	Jul-16-98	203067
LP15	Jul-16-98	203068
LP16	Feb-1-99	203609
LP17	Feb-1-99	203610
LP20	Nov-17-98	203485
LP21	Jun-18-99	PTA-252
LP22	Jun-18-99	PTA-253
LP23	Dec-22-99	PTA-1081

each is a mixture of cDNA clones derived from a variety of human tissue and cloned in either a plasmid vector or a phage vector, as shown in Table 5. These deposits are referred to as "the deposits" herein. The tissues from which the clones were derived are listed in Table 5, and the vector in which the cDNA is contained is also indicated in Table 5. The deposited material includes the cDNA clones which were partially sequenced and are related to the SEQ ID NO:X described in Table 1 (column 9). Thus, a clone which is isolatable from the ATCC Deposits by use of a sequence listed as SEQ ID NO:X may include the entire coding region of a human gene or in other cases such clone may include a substantial portion of the coding region of a human gene. Although the sequence listing lists only a portion of the DNA sequence in a clone included in the ATCC Deposits, it is well within the ability of one skilled in the art to complete the sequence of the DNA included in a clone isolatable from the

ATCC Deposits by use of a sequence (or portion thereof) listed in Table 1 by procedures hereinafter further described, and others apparent to those skilled in the art.

Also provided in Table 5 is the name of the vector which contains the cDNA clone. Each vector is routinely used in the art. The following additional information is provided for convenience.

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res. 16*:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., *Nucleic Acids Res. 17*:9494 (1989)) and pBK (Alting-Mees, M. A. et al., *Strategies 5*:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain XL-1 Blue, also available from Stratagene.

Vectors pSport1, pCMVSport 1.0, pCMVSport 2.0 and pCMVSport 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus 15*:59 (1993). Vector lafmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR®2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., *Nuc. Acids Res. 16*:9677-9686 (1988) and Mead, D. *et al., Bio/Technology 9:* (1991).

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or the cDNA contained in a deposited cDNA clone. The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include, but are not limited to, preparing probes or primers from the disclosed sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are allelic variants, orthologs, and/or species homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or the cDNA contained in the related cDNA clone in the deposit, using information from the sequences disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or the desired homologue.

The present invention provides a polynucleotide comprising, or alternatively consisting of, the nucleic acid sequence of SEQ ID NO:X, and/or the related cDNA clone (See, e.g., columns 1 and 9 of Table 1). The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in a deposited library. Polynucleotides encoding a polypeptide comprising, or alternatively consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a polypeptide encoded by the the cDNA in the related cDNA clone contained in a deposited library, are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of, the complement of the nucleic acid sequence of SEQ ID NO:X, and/or the complement of the coding strand of the related cDNA clone contained in a deposited library.

Many polynucleotide sequences, such as EST sequences, are publicly available and accessible through sequence databases and may have been publicly available prior to conception of the present invention. Preferably, such related polynucleotides are specifically excluded from the scope of the present invention. To list every related sequence would unduly burden the disclosure of this application. Accordingly, for each "Contig Id" listed in the first column of Table 3, preferably excluded are one or more polynucleotides comprising a nucleotide sequence described in the second column of Table 3 by the general formula of a-b, each of which are uniquely defined for the SEQ ID NO:X corresponding to that Contig Id in Table 1. Additionally, specific embodiments are directed to polynucleotide sequences excluding at least one, two, three, four, five, ten, or more of the specific polynucleotide sequences referenced by the Genbank Accession No. for each Contig Id which may be

included in column 3 of Table 3. In no way is this listing meant to encompass all of the sequences which may be excluded by the general formula, it is just a representative example.

Table 3.

Sequence/ Contig ID	General formula	Genbank Accession No.
500802	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 619 of SEQ ID NO:1, b is an integer of 15 to 633, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:1, and where b is greater than or equal to a + 14.	
531091	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 281 of SEQ ID NO:2, b is an integer of 15 to 295, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:2, and where b is greater than or equal to a + 14.	
553147	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 428 of SEQ ID NO:3, b is an integer of 15 to 442, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:3, and where b is greater than or equal to a + 14.	
558860	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 740 of SEQ ID NO:4, b is an integer of 15 to 754, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:4, and where b is greater than or equal to a + 14.	
561730	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 379 of SEQ ID NO:5, b is an integer of 15 to 393, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:5, and where b is greater than or equal to a + 14.	
585938	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 525 of SEQ ID NO:6, b is an integer of 15 to 539, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:6, and where b is greater than or equal to a + 14.	
587785	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 790 of SEQ ID	

	NO:7. b is an integer of 15 to 804, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:7, and where b is greater than or equal to a + 14.	
588916	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 706 of SEQ ID NO:8, b is an integer of 15 to 720, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:8, and where b is greater than or equal to a + 14.	
613825	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 526 of SEQ ID NO:9, b is an integer of 15 to 540, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:9, and where b is greater than or equal to a + 14.	
639090	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 547 of SEQ ID NO:10, b is an integer of 15 to 561, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:10, and where b is greater than or equal to a + 14.	
651644	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 379 of SEQ ID NO:11, b is an integer of 15 to 393, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:11, and where b is greater than or equal to a + 14.	
659544	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 308 of SEQ ID NO:12, b is an integer of 15 to 322, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:12, and where b is greater than or equal to a + 14.	
659739	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1893 of SEQ ID NO:13, b is an integer of 15 to 1907, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:13, and where b is greater than or equal to a + 14.	
661057	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1126 of SEQ ID NO:14, b is an integer of 15 to 1140, where both a	

	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:14. and where b is greater than or equal to a + 14.	
661313	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1994 of SEQ ID NO:15. b is an integer of 15 to 2008. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:15, and where b is greater than or equal to a + 14.	
666316	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 357 of SEQ ID NO:16. b is an integer of 15 to 371, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:16. and where b is greater than or equal to a + 14.	
669229	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 749 of SEQ ID NO:17. b is an integer of 15 to 763, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:17, and where b is greater than or equal to a + 14.	
670471	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1912 of SEQ ID NO:18. b is an integer of 15 to 1926, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:18, and where b is greater than or equal to a + 14.	
676611	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2287 of SEQ ID NO:19. b is an integer of 15 to 2301, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:19. and where b is greater than or equal to a + 14.	
691240	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 524 of SEQ ID NO:20. b is an integer of 15 to 538, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:20, and where b is greater than or equal to a + 14.	
702977	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1389 of SEQ ID NO:21, b is an integer of 15 to 1403. where both a and b correspond to the positions of nucleotide	

	residues shown in SEQ ID NO:21. and where b is greater than or equal to a + 14.	
709517	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 464 of SEQ ID NO:22. b is an integer of 15 to 478, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:22. and where b is greater than or equal to a + 14.	
714730	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1238 of SEQ ID NO:23. b is an integer of 15 to 1252, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:23. and where b is greater than or equal to a + 14.	
714834	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1060 of SEQ ID NO:24, b is an integer of 15 to 1074, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:24. and where b is greater than or equal to a + 14.	
715016	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1172 of SEQ ID NO:25. b is an integer of 15 to 1186. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:25. and where b is greater than or equal to a + 14.	
719584	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 874 of SEQ ID NO:26. b is an integer of 15 to 888, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:26, and where b is greater than or equal to a + 14.	
724637	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 775 of SEQ ID NO:27, b is an integer of 15 to 789, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:27, and where b is greater than or equal to a + 14.	
728392	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 833 of SEQ ID NO:28, b is an integer of 15 to 847. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:28. and where b is greater than	

	or equal to a + 14.	
738716	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 652 of SEQ ID NO:29, b is an integer of 15 to 666, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:29, and where b is greater than or equal to a + 14.	
739056	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 503 of SEQ ID NO:30, b is an integer of 15 to 517, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:30, and where b is greater than or equal to a + 14.	
739143	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2661 of SEQ ID NO:31, b is an integer of 15 to 2675, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:31, and where b is greater than or equal to a + 14.	
742329	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 263 of SEQ ID NO:32, b is an integer of 15 to 277, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:32, and where b is greater than or equal to a + 14.	
742557	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 907 of SEQ ID NO:33, b is an integer of 15 to 921, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:33, and where b is greater than or equal to a + 14.	
745481	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1453 of SEQ ID NO:34, b is an integer of 15 to 1467, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:34, and where b is greater than or equal to a + 14.	
746035	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2063 of SEQ ID NO:35, b is an integer of 15 to 2077, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:35, and where b is greater than or equal to a + 14.	

753731	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 370 of SEQ ID NO:36, b is an integer of 15 to 384, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:36, and where b is greater than or equal to a + 14.	
754383	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 454 of SEQ ID NO:37, b is an integer of 15 to 468, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:37, and where b is greater than or equal to a + 14.	
756749	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1081 of SEQ ID NO:38, b is an integer of 15 to 1095, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:38, and where b is greater than or equal to a + 14.	
757980	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1743 of SEQ ID NO:39, b is an integer of 15 to 1757, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:39, and where b is greater than or equal to a + 14.	R38216, R63249, R78721, H01441, H02557, H02640, H86258, H86321, N21599, W16868, W31882, W56228, N90610, AA047227, AA056107, AA058568, AA100609, AA115890
764818	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1931 of SEQ ID NO:40, b is an integer of 15 to 1945, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:40, and where b is greater than or equal to a + 14.	
765140	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 574 of SEQ ID NO:41, b is an integer of 15 to 588, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:41, and where b is greater than or equal to a + 14.	
766893	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1554 of SEQ ID NO:42, b is an integer of 15 to 1568, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:42, and where b is greater than or equal to a + 14.	R69702, R76994, R77002, H01357
771338	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1046 of SEQ ID NO:43. b is an integer of 15 to 1060. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:43. and where b is greater than or equal to a + 14.	
771412	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1330 of SEQ ID NO:44. b is an integer of 15 to 1344. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:44. and where b is greater than or equal to a + 14.	
772226	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 878 of SEQ ID NO:45. b is an integer of 15 to 892. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:45. and where b is greater than or equal to a + 14.	
773057	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 482 of SEQ ID NO:46. b is an integer of 15 to 496, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:46, and where b is greater than or equal to a + 14.	N41725
773173	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1215 of SEQ ID NO:47. b is an integer of 15 to 1229. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:47. and where b is greater than or equal to a + 14.	
780154	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1397 of SEQ ID NO:48. b is an integer of 15 to 1411. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:48. and where b is greater than or equal to a + 14.	
780768	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1671 of SEQ ID NO:49. b is an integer of 15 to 1685. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:49, and where b is greater than or equal to a + 14.	
780779	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 646 of SEQ ID NO:50, b is an integer of 15 to 660, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:50, and where b is greater than or equal to a + 14.	
782394	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1558 of SEQ ID NO:51, b is an integer of 15 to 1572, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:51, and where b is greater than or equal to a + 14.	R24689, R25853, R34457, R66839, R68536, H22874, H45555, N50184, AA015963, AA028939, AA028938
783160	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 621 of SEQ ID NO:52, b is an integer of 15 to 635, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:52, and where b is greater than or equal to a + 14.	
783506	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1353 of SEQ ID NO:53, b is an integer of 15 to 1367, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:53, and where b is greater than or equal to a + 14.	
784446	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 364 of SEQ ID NO:54, b is an integer of 15 to 378, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:54, and where b is greater than or equal to a + 14.	
784832	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1044 of SEQ ID NO:55, b is an integer of 15 to 1058, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:55, and where b is greater than or equal to a + 14.	
786813	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 668 of SEQ ID NO:56, b is an integer of 15 to 682, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:56, and where b is greater than or equal to a + 14.	W44740, AA235981
792139	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	

	where a is any integer between 1 to 630 of SEQ ID NO:57. b is an integer of 15 to 644. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:57. and where b is greater than or equal to a + 14.	
793987	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 752 of SEQ ID NO:58. b is an integer of 15 to 766. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:58. and where b is greater than or equal to a + 14.	
805715	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 2347 of SEQ ID NO:59. b is an integer of 15 to 2361. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:59. and where b is greater than or equal to a + 14.	
811111	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1458 of SEQ ID NO:60. b is an integer of 15 to 1472. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:60. and where b is greater than or equal to a + 14.	R11325, R11326. R43655. R43655. R72437, R78096. H23850. N20947, N22686. N25829. N27270. N31401. N40002, N46020. W92748. W92871. AA461202. AA461382
811113	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1658 of SEQ ID NO:61. b is an integer of 15 to 1672. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:61. and where b is greater than or equal to a + 14.	
823902	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1526 of SEQ ID NO:62. b is an integer of 15 to 1540, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:62, and where b is greater than or equal to a + 14.	
826518	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1030 of SEQ ID NO:63. b is an integer of 15 to 1044. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:63, and where b is greater than or equal to a + 14.	T60163, T60223, T61894, R12251, T81471, T81679, T95899, R98321. R98322. H52605. H59085. N27268. N31506, N53499, N54486, N58236. N92460. AA027189. AA045077. AA127016. AA418935, AA426582
826704	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 837 of SEQ ID	

	NO:64. b is an integer of 15 to 851. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:64. and where b is greater than or equal to a + 14.	
827720	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 2779 of SEQ ID NO:65. b is an integer of 15 to 2793. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:65. and where b is greater than or equal to a + 14.	
828102	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 289 of SEQ ID NO:66. b is an integer of 15 to 303. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:66. and where b is greater than or equal to a + 14.	
828180	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1396 of SEQ ID NO:67. b is an integer of 15 to 1410. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:67, and where b is greater than or equal to a + 14.	
828386	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1010 of SEQ ID NO:68. b is an integer of 15 to 1024. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:68, and where b is greater than or equal to a + 14.	
828658	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1834 of SEQ ID NO:69, b is an integer of 15 to 1848, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:69, and where b is greater than or equal to a + 14.	
828919	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2668 of SEQ ID NO:70. b is an integer of 15 to 2682, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:70. and where b is greater than or equal to a + 14.	T66771, T66772, T71638, R08935. R09044, R09373, T80114, T85695, R00758. R00759, R12645, R19577, R20545, R22041, R22097. R20545, R59701, R59811, R60034. R60096, R60694. R76255. R81371. R81370. H04390. H04415. H05912. H47622, H47647, R83679. H71735. H72298, N25487, N35542. N49731. N52660. N67681. N75596, W03490. AA044638. AA044702, AA165090. AA164628. AA215698, AA215699, AA233182. AA233196, AA236759. AA256822. AA429489.

		AA428534
829572	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 398 of SEQ ID NO:71, b is an integer of 15 to 412, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:71, and where b is greater than or equal to a + 14.	T63032
830138	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1347 of SEQ ID NO:72, b is an integer of 15 to 1361, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:72, and where b is greater than or equal to a + 14.	
830208	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 914 of SEQ ID NO:73, b is an integer of 15 to 928, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:73, and where b is greater than or equal to a + 14.	R01611, N76461, W74577, W79757, AA045350, AA056064, AA190524
830248	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1172 of SEQ ID NO:74, b is an integer of 15 to 1186, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:74, and where b is greater than or equal to a + 14.	
830275	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 919 of SEQ ID NO:75, b is an integer of 15 to 933, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:75, and where b is greater than or equal to a + 14.	
830286	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1950 of SEQ ID NO:76, b is an integer of 15 to 1964, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:76, and where b is greater than or equal to a + 14.	T90376, R46154, R46154, AA224239, AA467906, AA483293, AA502593, AA513313, AA594445, AA594570, AA594876, AA579404, AA720893, AA767344, AA857646, AA877489, AA954868, AA991634, AI014751, C02074, AA093141
830347	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1788 of SEQ ID NO:77, b is an integer of 15 to 1802, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:77, and where b is greater than or equal to a + 14.	

830348	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 981 of SEQ ID NO:78, b is an integer of 15 to 995, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:78, and where b is greater than or equal to a + 14.	AA983601
830364	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1201 of SEQ ID NO:79, b is an integer of 15 to 1215, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:79, and where b is greater than or equal to a + 14.	
830394	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2646 of SEQ ID NO:80, b is an integer of 15 to 2660, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:80, and where b is greater than or equal to a + 14.	
830398	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1776 of SEQ ID NO:81, b is an integer of 15 to 1790, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:81, and where b is greater than or equal to a + 14.	
830412	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1336 of SEQ ID NO:82, b is an integer of 15 to 1350, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:82, and where b is greater than or equal to a + 14.	
830436	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1732 of SEQ ID NO:83, b is an integer of 15 to 1746, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:83, and where b is greater than or equal to a + 14.	T89041, R38418, R51559, R62385, R63785, H21426, N55384, AA009460, AA039527, AA039526, AA490811, AA588539, AA574253, AA827525, AA975094, D79482, D79908, N55964, C14631, C14891, C14892
830464	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1477 of SEQ ID NO:84, b is an integer of 15 to 1491, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:84, and where b is greater than or equal to a + 14.	H06247, H19227, W52470
830471	Preferably excluded from the present invention are	R28064, R28282, AA143044, AA151127,

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 954 of SEQ ID NO:85, b is an integer of 15 to 968, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:85, and where b is greater than or equal to a + 14.	AA165093, AA164631, AA256943, AA765384, D80554
830477	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3054 of SEQ ID NO:86, b is an integer of 15 to 3068, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:86, and where b is greater than or equal to a + 14.	T71686, R81413, R81414, H52583, H84987, H87923, H88319, H88319, W74073, W79680, AA021098, AA179389, AA182649, AA188175, AA191449, AA228943, AA228942, AA594459, AA737972, C02737
830500	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2216 of SEQ ID NO:87, b is an integer of 15 to 2230, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:87, and where b is greater than or equal to a + 14.	
830509	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1149 of SEQ ID NO:88, b is an integer of 15 to 1163, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:88, and where b is greater than or equal to a + 14.	
830528	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1925 of SEQ ID NO:89, b is an integer of 15 to 1939, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:89, and where b is greater than or equal to a + 14.	
830542	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2018 of SEQ ID NO:90, b is an integer of 15 to 2032, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:90, and where b is greater than or equal to a + 14.	T60268, T61648, T68371, T88743, R00503, R13392, R40908, R40908, H02114, H07926, H29767, H29768, H38826, H93354, W42415, W42513, W61060, W72566, W76560, AA011078, AA011079, AA031697, AA031863, AA058529, AA100913, AA100912, AA129619, AA129593, AA129330, AA128581, AA160087, AA160675, AA173629, AA173985, AA186698, AA188326, AA480672, AA587251, AA576938, AA743161, AA834774, AA872783, AA877207, AA878505, AA923685, AA934427, AA962214, AA995455, AA995857, N88876
830564	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	

	where a is any integer between 1 to 1774 of SEQ ID NO:91. b is an integer of 15 to 1788. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:91. and where b is greater than or equal to a + 14.	
830611	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 481 of SEQ ID NO:92. b is an integer of 15 to 495, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:92. and where b is greater than or equal to a + 14.	
830618	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1363 of SEQ ID NO:93. b is an integer of 15 to 1377. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:93. and where b is greater than or equal to a + 14.	R43709. R43709. H09113. H43746. N92632. AA022453. AA120876. AA120889. AA493651. AA493785. AA494347. AA565392. AA743179. AA769161
830620	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 2805 of SEQ ID NO:94. b is an integer of 15 to 2819. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:94, and where b is greater than or equal to a + 14.	
830630	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 691 of SEQ ID NO:95. b is an integer of 15 to 705, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:95. and where b is greater than or equal to a + 14.	
830654	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3458 of SEQ ID NO:96, b is an integer of 15 to 3472, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:96, and where b is greater than or equal to a + 14.	
830660	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1202 of SEQ ID NO:97, b is an integer of 15 to 1216. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:97, and where b is greater than or equal to a + 14.	
830661	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1172 of SEQ ID	

	NO:98. b is an integer of 15 to 1186. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:98. and where b is greater than or equal to a + 14.	
830704	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1106 of SEQ ID NO:99. b is an integer of 15 to 1120. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:99. and where b is greater than or equal to a + 14.	
830765	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1211 of SEQ ID NO:100. b is an integer of 15 to 1225, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:100. and where b is greater than or equal to a + 14.	
830778	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1199 of SEQ ID NO:101. b is an integer of 15 to 1213. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:101, and where b is greater than or equal to a + 14.	
830784	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1550 of SEQ ID NO:102, b is an integer of 15 to 1564, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:102. and where b is greater than or equal to a + 14.	R63323. R66534, AA491630
830800	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1443 of SEQ ID NO:103. b is an integer of 15 to 1457, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:103, and where b is greater than or equal to a + 14.	
830821	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 771 of SEQ ID NO:104, b is an integer of 15 to 785. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:104. and where b is greater than or equal to a + 14.	
830849	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 907 of SEQ ID NO:105. b is an integer of 15 to 921. where both a	AA258128. AA259034. AA262104. AA742612. AA804402

	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:105, and where b is greater than or equal to a + 14.	
830903	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 578 of SEQ ID NO:106, b is an integer of 15 to 592, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:106, and where b is greater than or equal to a + 14.	
830913	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2234 of SEQ ID NO:107, b is an integer of 15 to 2248, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:107, and where b is greater than or equal to a + 14.	R06463, R06517, R48006, R51455, R61502, R72398, R72399, R74489, R74599, H07933, H08039, H61149, H62056, H90758, H90809, N32837, N42283, W40284, W45325, AA079353, AA079592, AA100814, AA102342, AA111844, AA122150, AA134127, AA134128, AA148738, AA148709, AA164240, AA164899, AA164275, AA171881, AA179310, AA179453, AA180811, AA180955, AA187432, AA190377, AA190791, AA190383, AA458475, AA427428, AA468548, AA554518, AA595768, AA595893, AA640601, AA574035, AA658143, AA863401, AA906604, AA995159, C03746, C04875, C05396, AA033510
830920	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 771 of SEQ ID NO:108, b is an integer of 15 to 785, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:108, and where b is greater than or equal to a + 14.	
830938	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 597 of SEQ ID NO:109, b is an integer of 15 to 611, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:109, and where b is greater than or equal to a + 14.	AA053612
830980	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 650 of SEQ ID NO:110, b is an integer of 15 to 664, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:110, and where b is greater than or equal to a + 14.	
831014	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4051 of SEQ ID NO:111, b is an integer of 15 to 4065, where both a	

	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:111, and where b is greater than or equal to a + 14.	
831026	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1478 of SEQ ID NO:112, b is an integer of 15 to 1492, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:112, and where b is greater than or equal to a + 14.	
831031	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1468 of SEQ ID NO:113, b is an integer of 15 to 1482, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:113, and where b is greater than or equal to a + 14.	R46004, R46004, H06850, N27532, N30567, N30842, N34647, N40349, N41369, N49777, N52708, N62958, W68355, W68490, AA054602, AA193410, AA193648, AA503204, AA688236, AA730103, AA736540, AA747555, AA811522, AA863169, N79861
831055	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3717 of SEQ ID NO:114, b is an integer of 15 to 3731, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:114, and where b is greater than or equal to a + 14.	
831057	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1301 of SEQ ID NO:115, b is an integer of 15 to 1315, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:115, and where b is greater than or equal to a + 14.	R69415, R69546, H14127, H62767, N62927, N63320, W00649, W01189, AA053293, AA058396, AA149075, AA458528, AA418699, AA418770, AA505598, AA576507, AA730033, AA805864, AA988279, AA991217, D82661, C21298
831062	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1306 of SEQ ID NO:116, b is an integer of 15 to 1320, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:116, and where b is greater than or equal to a + 14.	
831117	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2011 of SEQ ID NO:117, b is an integer of 15 to 2025, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:117, and where b is greater than or equal to a + 14.	R80585, R80586, N49020, AA173625, AA173981, AA557142, AA627866, AA847195, AI015673
831122	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1281 of SEQ ID NO:118, b is an integer of 15 to 1295, where both a and b correspond to the positions of nucleotide	R72079, R72128, AA715820, AA804163, AA809123, AA641490

	residues shown in SEQ ID NO:118, and where b is greater than or equal to a + 14.	
831125	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1243 of SEQ ID NO:119, b is an integer of 15 to 1257, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:119, and where b is greater than or equal to a + 14.	N80647, AA114140, AA143553, AA156386, N68188, AA070867
831132	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 383 of SEQ ID NO:120, b is an integer of 15 to 397, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:120, and where b is greater than or equal to a + 14.	
831152	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 862 of SEQ ID NO:121, b is an integer of 15 to 876, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:121, and where b is greater than or equal to a + 14.	AA765155
831157	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1264 of SEQ ID NO:122, b is an integer of 15 to 1278, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:122, and where b is greater than or equal to a + 14.	T57943, R34275, R35472, R77406, R77405, N23203, N59015, AA160841, AA610280, AA857624, AI089936, AI094724, AI094954
831160	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3101 of SEQ ID NO:123, b is an integer of 15 to 3115, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:123, and where b is greater than or equal to a + 14.	
831193	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 365 of SEQ ID NO:124, b is an integer of 15 to 379, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:124, and where b is greater than or equal to a + 14.	
831197	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1253 of SEQ ID NO:125, b is an integer of 15 to 1267, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:125, and where b is	AA134613

	greater than or equal to a + 14.	
831217	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 827 of SEQ ID NO:126, b is an integer of 15 to 841, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:126, and where b is greater than or equal to a + 14.	
831239	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1158 of SEQ ID NO:127, b is an integer of 15 to 1172, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:127, and where b is greater than or equal to a + 14.	T68487, T88923, T88994, R09550, R09663, R26714, R26937, H27046, H28228, H30272, H30335, N27966, N36884, N46156, N93575, W21407, W44513, W44514, W47626, W47627, W56215, W60528, W80465, W80574, W92729, AA002237, AA002076, AA099290, AA099291, AA127753, AA127706, AA128275, AA128572, AA148737, AA149497, AA419078, AA423819, AA506117, AA534694, AA552105, AA552219, AA583468, AA622094, AA633205, AA878663, AA911544, AA916173, AA974873, AA988860, AI056396, AI074163, W92753
831248	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 877 of SEQ ID NO:128, b is an integer of 15 to 891, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:128, and where b is greater than or equal to a + 14.	
831313	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2447 of SEQ ID NO:129, b is an integer of 15 to 2461, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:129, and where b is greater than or equal to a + 14.	T61093, T97774, R13148, R31511, R32943, R33906, R33921, R37053, R44148, R44148, R74449, R79209, R79476, H12271, H27631, H30122, R84834, H63166, H71003, H71015, H83387, N23726, N23730, N23773, N52416, N66497, N67917, N68137, N73801, N99428, W95944, AA018712, AA020879, AA429721, AA470397, AA493243, AA507952, AA515358, AA583463, AA617991, AA618186, AA631437, AA566089, AA746085, AA837997, AA878863, AA922678, AA985597, AA947992, AI074096, C03207, C17030, C18106
831369	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2183 of SEQ ID NO:130, b is an integer of 15 to 2197, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:130, and where b is greater than or equal to a + 14.	
831371	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 450 of SEQ ID NO:131, b is an integer of 15 to 464, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:131, and where b is greater than or equal to a + 14.	
831373	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1936 of SEQ ID NO:132, b is an integer of 15 to 1950, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:132, and where b is greater than or equal to a + 14.	T50786, T50949, T53797, T53916, T64650, T71681, T71836, T71876, T71877, T74596, T74656, H30426, H46449, H46671, H46670, H46990, H50500, AA419051, AA423809, AA928986
831387	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2079 of SEQ ID NO:133, b is an integer of 15 to 2093, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:133, and where b is greater than or equal to a + 14.	
831410	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 715 of SEQ ID NO:134, b is an integer of 15 to 729, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:134, and where b is greater than or equal to a + 14.	
831448	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1175 of SEQ ID NO:135, b is an integer of 15 to 1189, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:135, and where b is greater than or equal to a + 14.	
831450	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1452 of SEQ ID NO:136, b is an integer of 15 to 1466, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:136, and where b is greater than or equal to a + 14.	
831472	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 126 of SEQ ID NO:137, b is an integer of 15 to 140, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:137, and where b is greater than or equal to a + 14.	
831473	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	

	where a is any integer between 1 to 4128 of SEQ ID NO:138. b is an integer of 15 to 4142. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:138. and where b is greater than or equal to a + 14.	
831474	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1733 of SEQ ID NO:139. b is an integer of 15 to 1747. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:139. and where b is greater than or equal to a + 14.	T66054. T89542. R10967. T78297. T83524. T97793, R13138, H08701. H10662. R82956. R96295, R98912. H66237. H79525, N31425, N36736, W76142. W81053, AA010227, AA011652. AA057613. AA057653. AA069088. AA083946. AA084193. AA126186. H70618. H79526. W72916. W80802. AA011433, AA057699, AA057752. AA069023
831494	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1226 of SEQ ID NO:140. b is an integer of 15 to 1240. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:140. and where b is greater than or equal to a + 14.	H14081. H14102. N34979. N42213. N43740. N68241, W69584. W69583. AA507828. AA877181. AA975100. AI000204
831506	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 657 of SEQ ID NO:141. b is an integer of 15 to 671. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:141. and where b is greater than or equal to a + 14.	AA035596. AA577792. AA903617. AA972775. AA996054. C00084
831533	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3251 of SEQ ID NO:142. b is an integer of 15 to 3265. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:142. and where b is greater than or equal to a + 14.	
831539	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 751 of SEQ ID NO:143. b is an integer of 15 to 765. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:143. and where b is greater than or equal to a + 14.	
831556	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1680 of SEQ ID NO:144, b is an integer of 15 to 1694. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:144. and where b is greater than or equal to a + 14.	H01879. H01880. H43546, H43547. H43548. N58813. N75148. AA428902. AA429101. AA278337. AA662009. AA928907. AA988624
831594	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 809 of SEQ ID NO:145, b is an integer of 15 to 823, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:145, and where b is greater than or equal to a + 14.	
831598	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1120 of SEQ ID NO:146, b is an integer of 15 to 1134, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:146, and where b is greater than or equal to a + 14.	
831608	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1472 of SEQ ID NO:147, b is an integer of 15 to 1486, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:147, and where b is greater than or equal to a + 14.	
831613	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 139 of SEQ ID NO:148, b is an integer of 15 to 153, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:148, and where b is greater than or equal to a + 14.	
831622	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 868 of SEQ ID NO:149, b is an integer of 15 to 882, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:149, and where b is greater than or equal to a + 14.	T40013, T40117, T55842, T55892, T58738, T58764, T58805, T58835, T58963, T60293, T60386, T61270, T61322, T61371, T61395, T61404, T61721, T61734, T61735, T61841, T61856, T61857, T61884, T62049, T62065, T62070, T62087, T62113, T62126, T62146, T41021, T62664, T62668, T62669, T62676, T62816, T62819, T62820, T62827, T64118, T64230, T64368, T64422, T64678, T64698, T64747, T67429, T67590, T67709, T67724, T67754, T67785, T67831, T67863, T67888, T67996, T68022, T68038, T68104, T68142, T68217, T68418, T68465, T68484, T68531, T68548, T68557, T68575, T68623, T68633, T68648, T68653, T68760, T68826, T68895, T68969, T68981, T69056, T69126, T69184, T69428, T69605, T69622, T69678, T69699, T70483, T70907, T70960, T71019, T71080, T71224, T71297, T71437, T71660, T71885, T71903, T71985, T72050, T72115, T72129, T72147, T72158, T72263, T72310, T72415, T72769, T72775, T72802, T72897, T72903, T72922, T72924, T73035, T73068, T73167, T73224, T73305, T73392, T73458, T73473, T73482, T73525, T73540, T73541, T73551, T73560, T73599, T73606, T73619, T73637, T73644, T73655, T73659, T73660, T73800,

		T73887, T73913, T73945, T73950, T74048, T74200, T74201, T74423, T74477, T74559, T74706, T74827, T99112, R05781, R05867, H47944, R95831, H60131, H65347, H65551, H68454, H68777, H73380, H73381, H79275, H79386, H82213, H82307, H93202, H93992, H93991, H94491, H94804, H95257, H95307, H95341, N28274, N58244, N68733, N77623, N80767, N91623, W07555, W80697, AA004677, AA004255, AA033869, AA034057, AA234464, AA491842, C20927
831631	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1494 of SEQ ID NO:150, b is an integer of 15 to 1508, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:150, and where b is greater than or equal to a + 14.	
831632	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1218 of SEQ ID NO:151, b is an integer of 15 to 1232, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:151, and where b is greater than or equal to a + 14.	T60158, T60218, T62213, T62652, T62877, T62966, T63329, T63951, T64542, T64634, T65965, T90119, T91565, T91610, T92138, T94160, T94999, T90219, T83025, T84028, T84029, T84511, R22325, R22619, R22620, R25250, R25595, R26992, R27328, R32850, R32954, R33282, R44282, R47779, R48151, R48152, R48322, R48428, R48538, R50415, R52277, R52278, R54608, R44282, R55376, R70352, R72103, R72155, R72280, R72317, R72367, R72368, R72371, R72372, R72716, R73784, R74375, R77393, R77394, R77892, R77987, R81485, R81725, H05676, H15941, H22149, H22193, H24533, H25059, H26810, H27743, H27803, H28012, H28066, H28290, H28291, H30654, H39748, H39761, H41932, H41979, H42063, H42642, H42766, H42767, H44628, H45776, H45777, H46386, H46404, R93135, R93942, R94660, R94661, H50708, H50709, H50720, H50812, H50811, H50826, H61352, H62379, H63665, H63944, H66336, H66385, H70746, H73887, H74080, H74176, H82646, H82647, H86555, H87065, H87719, H91147, H91197, H93078, H93211, H98788, N24993, N25111, N30229, N32159, N34033, N36553, N41829, N42292, N46951, N49340, N52921, N55462, N57121, N69863, N76837, N80667, N92844, N93333, N93683, N94449, N95075, W16427, W15325, W23470, W23480, W25070, W25186, W30795,

		W38675, W39219, W39393, W69270, W69557, AA019864, AA022662, AA022669, AA022768, AA025335, AA024417, AA031282, AA031281, AA032192, AA039752, AA040328, AA040307, AA041359, AA041442, AA057720, AA074855, AA086192, AA099717, AA099716, AA100416, AA142927, AA143150, AA149895, AA150239, AA150313, AA176193, AA459294, AA464165, AA425845, AA425899, AA428397, AA430393, AA427364, AA469113, AA505259, AA515918, AA516032, AA527677, AA533908, AA541266, AA554671, AA555247, AA557794, AA565267, AA582247, AA584415, AA588477, AA593255, AA595311, AA595376, AA604354, AA622137, AA573444, AA574244, AA732469, AA740323, AA741360, AA742872, AA749432, AA807903, AA808285, AA872498, AA873181, AA878139, AA878294, AA909748, AA937058, AA987672, AA994225, AI076066, W07696
831653	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 985 of SEQ ID NO:152, b is an integer of 15 to 999, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:152, and where b is greater than or equal to a + 14.	
831655	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1198 of SEQ ID NO:153, b is an integer of 15 to 1212, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:153, and where b is greater than or equal to a + 14.	N95539, W24228, W37689, AA019086, AA430215
831708	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2347 of SEQ ID NO:154, b is an integer of 15 to 2361, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:154, and where b is greater than or equal to a + 14.	
831738	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1817 of SEQ ID NO:155, b is an integer of 15 to 1831, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:155, and where b is greater than or equal to a + 14.	

831741	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1172 of SEQ ID NO:156, b is an integer of 15 to 1186, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:156, and where b is greater than or equal to a + 14.	T47689. T80213. H11356. H13411, R86865. R87546. N35663. AA081442. AA161001. C17978. C18946
831754	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1434 of SEQ ID NO:157, b is an integer of 15 to 1448, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:157, and where b is greater than or equal to a + 14.	
831760	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 990 of SEQ ID NO:158, b is an integer of 15 to 1004, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:158, and where b is greater than or equal to a + 14.	R73907, R74000. N64405. AA196765. AA232516. AA806432. AA837776. AI017699
831780	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1495 of SEQ ID NO:159, b is an integer of 15 to 1509, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:159, and where b is greater than or equal to a + 14.	AA100654. AA112750, AA594472, AA731487
831796	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2146 of SEQ ID NO:160, b is an integer of 15 to 2160, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:160, and where b is greater than or equal to a + 14.	H14891, W74005, AA623010, D80585, AI096496. W38434
831800	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3595 of SEQ ID NO:161, b is an integer of 15 to 3609, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:161, and where b is greater than or equal to a + 14.	
831807	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1589 of SEQ ID NO:162, b is an integer of 15 to 1603, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:162, and where b is greater than or equal to a + 14.	
831812	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 839 of SEQ ID NO:163, b is an integer of 15 to 853, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:163, and where b is greater than or equal to a + 14.	
831813	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1903 of SEQ ID NO:164, b is an integer of 15 to 1917, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:164, and where b is greater than or equal to a + 14.	H14269, AA069213, AA808661
831830	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2406 of SEQ ID NO:165, b is an integer of 15 to 2420, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:165, and where b is greater than or equal to a + 14.	H04695, AA112742, AA251641, AA506539
831860	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2047 of SEQ ID NO:166, b is an integer of 15 to 2061, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:166, and where b is greater than or equal to a + 14.	
831872	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2553 of SEQ ID NO:167, b is an integer of 15 to 2567, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:167, and where b is greater than or equal to a + 14.	R15368, R36227, R36228, R36669, R39751, H12331, H12382, H47986, R84945, R97224, R97223, W78107, AA149874, AA193466, AA193348, AA287444, AA535607, AA687414, AA689396, AA748665, AA809715
831896	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2310 of SEQ ID NO:168, b is an integer of 15 to 2324, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:168, and where b is greater than or equal to a + 14.	R59635, N28389, AA158646, AA158659, AA188594, AA190705, AA459426, AA465652
831928	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1770 of SEQ ID NO:169, b is an integer of 15 to 1784, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:169, and where b is greater than or equal to a + 14.	
831949	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 1282 of SEQ ID NO:170, b is an integer of 15 to 1296, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:170, and where b is greater than or equal to a + 14.	
831950	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1883 of SEQ ID NO:171, b is an integer of 15 to 1897, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:171, and where b is greater than or equal to a + 14.	
831953	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1709 of SEQ ID NO:172, b is an integer of 15 to 1723, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:172, and where b is greater than or equal to a + 14.	
831975	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1402 of SEQ ID NO:173, b is an integer of 15 to 1416, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:173, and where b is greater than or equal to a + 14.	
832036	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1942 of SEQ ID NO:174, b is an integer of 15 to 1956, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:174, and where b is greater than or equal to a + 14.	R60820, R78776, R79082, H01912, H04427, N34789, N44513, W20183, W35150, AA159701, AA159628, AA470753, AA659808
832047	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1675 of SEQ ID NO:175, b is an integer of 15 to 1689, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:175, and where b is greater than or equal to a + 14.	R21952, R21968, R26963, R78028, H75703, H75632, H84015, H88136, H88135, H94007, H95012, N24834, N30818, N31761, N41592, N79533, W16686, W24639, W38979, W87777, W87875, AA121146, AA122426, AA131874, AA131978, AA147083, AA147140, AA282507, AA282605, AA558945, H84016, AA587558, AA830662, AA866026, AA917653, AI017813, C06340
832078	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1002 of SEQ ID NO:176, b is an integer of 15 to 1016, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:176, and where b is greater than or equal to a + 14.	

832100	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1350 of SEQ ID NO:177, b is an integer of 15 to 1364, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:177, and where b is greater than or equal to a + 14.	
832104	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 726 of SEQ ID NO:178, b is an integer of 15 to 740, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:178, and where b is greater than or equal to a + 14.	
832268	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1396 of SEQ ID NO:179, b is an integer of 15 to 1410, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:179, and where b is greater than or equal to a + 14.	
832270	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1479 of SEQ ID NO:180, b is an integer of 15 to 1493, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:180, and where b is greater than or equal to a + 14.	
832279	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2026 of SEQ ID NO:181, b is an integer of 15 to 2040, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:181, and where b is greater than or equal to a + 14.	
832317	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 955 of SEQ ID NO:182, b is an integer of 15 to 969, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:182, and where b is greater than or equal to a + 14.	R81508, H12476, H86945, AA053747, AA115783, AA133749, AA134163, AA134164, AA224985, AA228334, AA228423, AA229297, AA640471, AA657793, AA687568, AA904162, AA983632
832354	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1438 of SEQ ID NO:183, b is an integer of 15 to 1452, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:183, and where b is greater than or equal to a + 14.	
832364	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2105 of SEQ ID NO:184, b is an integer of 15 to 2119, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:184, and where b is greater than or equal to a + 14.	
832378	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1311 of SEQ ID NO:185, b is an integer of 15 to 1325, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:185, and where b is greater than or equal to a + 14.	
832385	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 419 of SEQ ID NO:186, b is an integer of 15 to 433, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:186, and where b is greater than or equal to a + 14.	
832428	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 845 of SEQ ID NO:187, b is an integer of 15 to 859, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:187, and where b is greater than or equal to a + 14.	AA031420
832485	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 819 of SEQ ID NO:188, b is an integer of 15 to 833, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:188, and where b is greater than or equal to a + 14.	R63025, R66741, H53264, H53265, H53769, H53822, H54405, H54489, H81182, H91282, AA526672, H81181
832494	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2197 of SEQ ID NO:189, b is an integer of 15 to 2211, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:189, and where b is greater than or equal to a + 14.	T61040, T61591, T90055, T90157, T92840, T93714, T96177, T77726, H04686, H05450, H06997, H20176, H20366, R92666, H65144, H92413, N64053, N64060, N66714, N71338, N71388, N79742, N95497, N99884, W07259, W24989, W37394, W37657, W40208, W40260, W40532, W45430, W56165, W60427, W60986, W61080, W63739, W72328, W73757, W74394, AA025512, AA026057, AA065019, AA069295, AA069798, AA069845, AA070441, AA075793, AA083393, AA083394, AA084576, AA086181, AA099019, AA099097, AA099493, AA102003, AA100395, AA100554, AA100555, AA100638, AA101578, AA113226, AA113811, AA115645, AA115646,

		AA115888. AA115889. AA122231. AA121108. AA121596. AA121671. AA121743. AA126075. AA126102. AA126181. AA126295. AA126404. AA129470. AA129665. AA133945. AA133946. AA146752. AA155947. AA157140. AA157228. AA159947. AA160900. AA164889. AA164890. AA164840. AA164839. AA172107. AA182040. AA171714. AA187244. AA187376. AA186418. AA188846. AA189131. AA196155. AA196257. AA196611. AA196789. AA196961. AA223155. AA223415. AA226816. AA226856. AA227026. AA227109. AA227208. AA243161. AA243205. AA428759. AA429347. AA514858. AA535250. AA555125. AA565075. AA565168. AA581531. AA587192. AA576761. AA580523. AA659699. AA688240. AA689484. AA689543. AA689313. AA729979. AA740203. AA747258. AA747399. AA747993. AA837961. AA865930. AA906561. AA910350, AA919085. AA931143, AA999884. AI051141. F19298. W22294, W22759. W22970. W25820, W73709, C02713. C02766. C03390. C03613, C04202. C05262. C05272. R28954. R29028, R29032, AA062628. AA090039. C18989
832512	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1645 of SEQ ID NO:190. b is an integer of 15 to 1659, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:190. and where b is greater than or equal to a + 14.	
832515	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3880 of SEQ ID NO:191, b is an integer of 15 to 3894, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:191, and where b is greater than or equal to a + 14.	
832526	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 681 of SEQ ID NO:192. b is an integer of 15 to 695. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:192, and where b is greater than or equal to a + 14.	
832575	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	R28543. R28684. R55782. R55862, R62797. R62843. R67670. R71154.

	sequence described by the general formula of a-b, where a is any integer between 1 to 3117 of SEQ ID NO:193, b is an integer of 15 to 3131, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:193, and where b is greater than or equal to a + 14.	R71651, N20642, N24838, N25562, N29014, N31768, N34161, N57560, N72111, W00338, W00374, W30889, W52729, W59982, W68047, W68189, AA019459, AA043870, AA044336, AA045040, AA045041, AA115599, AA115134, AA131177, AA165259, AA165260, AA165191, AA165192, AA164549, AA164550, AA261988, AA424972, AA279863, AA458832, AA459024, AA505193, AA507542, AA514388, AA622542, AA689232, AA689233, AA804910, AA807169, AA832321, AA878091, AA904023, AA936069, AA936071, AA946621, C00143, N86645, AA010988, AA641236, AA641464, C18301
832576	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2044 of SEQ ID NO:194, b is an integer of 15 to 2058, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:194, and where b is greater than or equal to a + 14.	
832588	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 817 of SEQ ID NO:195, b is an integer of 15 to 831, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:195, and where b is greater than or equal to a + 14.	
832634	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 947 of SEQ ID NO:196, b is an integer of 15 to 961, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:196, and where b is greater than or equal to a + 14.	
832728	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 592 of SEQ ID NO:197, b is an integer of 15 to 606, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:197, and where b is greater than or equal to a + 14.	
833094	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 379 of SEQ ID NO:198, b is an integer of 15 to 393, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:198, and where b is greater than or equal to a + 14.	

833395	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1047 of SEQ ID NO:199, b is an integer of 15 to 1061. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:199. and where b is greater than or equal to a + 14.	
834326	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1345 of SEQ ID NO:200. b is an integer of 15 to 1359. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:200. and where b is greater than or equal to a + 14.	
834583	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 712 of SEQ ID NO:201. b is an integer of 15 to 726. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:201. and where b is greater than or equal to a + 14.	
834944	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 2700 of SEQ ID NO:202. b is an integer of 15 to 2714. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:202. and where b is greater than or equal to a + 14.	
835012	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 408 of SEQ ID NO:203, b is an integer of 15 to 422. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:203. and where b is greater than or equal to a + 14.	
835104	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 2325 of SEQ ID NO:204, b is an integer of 15 to 2339. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:204, and where b is greater than or equal to a + 14.	
835332	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1641 of SEQ ID NO:205. b is an integer of 15 to 1655. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:205. and where b is greater than or equal to a + 14.	
835487	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 5131 of SEQ ID NO:206, b is an integer of 15 to 5145, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:206, and where b is greater than or equal to a + 14.	
836182	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 473 of SEQ ID NO:207, b is an integer of 15 to 487, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:207, and where b is greater than or equal to a + 14.	
836522	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2282 of SEQ ID NO:208, b is an integer of 15 to 2296, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:208, and where b is greater than or equal to a + 14.	
836655	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 611 of SEQ ID NO:209, b is an integer of 15 to 625, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:209, and where b is greater than or equal to a + 14.	
836787	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1537 of SEQ ID NO:210, b is an integer of 15 to 1551, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:210, and where b is greater than or equal to a + 14.	W56241, W56321, AA009901, AA521313, AA732599, AA730271, AA766911, AA767313, W27009
836789	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 997 of SEQ ID NO:211, b is an integer of 15 to 1011, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:211, and where b is greater than or equal to a + 14.	T68817, R22374, R27362, H38950, R89148, R91088, H68416, H93594, N33889, N47045, N56761, W19886, W44630, W61370, W86385, AA036993, AA065062, AA101017, AA121107, AA130485, AA147474, AA160596, AA282977
838577	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1625 of SEQ ID NO:212, b is an integer of 15 to 1639, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:212, and where b is greater than or equal to a + 14.	T53501, T40735, T63398, T63985, T64053, T64155, T64284, T93511, T94941, T94995, T96340, R00890, R01553, R12738, R12739, R39790, R54423, R66373, R66595, R67104, R67219, R79151, R79152, R82180, R82224, R82470, R82471, H01963, H02048, H02758, H02759, H05982, H19484, H19567, H19882, H19900, H44901, H44938, H44978, H46289, H46871, H49538,

		H49781, H53114, H53220, H54300, H56079, H56279, H79695, H79696, N23140, N25755, N25850, N26983, N29784, N32719, N36477, N40104, N42924, N44580, N50724, N55052, N67751, N93444, N98425, N98537, W02803, W21105, W23673, W30688, W30899, W35106, W45448, W45449, W45661, W44441, W46823, W46872, W47373, W47374, W52205, W58331, W58652, W96332, AA007386, AA007676, AA011363, AA016311, AA017511, AA018464, AA019899, AA025040, AA025039, AA029796, AA029797, AA031472, AA035395, AA035396, AA037272, AA040791, AA041228, AA042893, AA043029, AA055565, AA056185, AA056186, AA056621, AA056726, AA069193, AA079705, AA082517, AA084044, AA084043, AA115273, AA115056, AA132031, AA132153, AA149267, AA149284, AA149378, AA158093, AA158103, AA158364, AA158904, AA158905, AA165106, AA220957, AA235312, AA251169, AA421302, AA421425, AA428706, AA429291, AA513790, AA531603, AA551736, AA554236, AA605236, AA604674, AA604939, AA612935, AA617731, AA627300, AA687527, AA732095, AA740760, AA765135, AA765136, AA765296, AA765891, AA888144, AA908665, AA928038, AA936934, AA961143, AA987647, AA975856, W03595, C03206, C18055, AA164690, AA218956, AA291352, AA292329, AA293276, AA393988, AA398076, AA410772, D12417, AA442678, AA442969, AA454814, AA454888, AA482370, AA486098, AA486161, AA625879, AA678365, AA679281, AA703505, AA722872, AA732793, AA989559, AI003448, AI014938, AI022070, AI084792, AI092360
838717	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2113 of SEQ ID NO:213, b is an integer of 15 to 2127, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:213, and where b is greater than or equal to a + 14.	
839008	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1152 of SEQ ID	

	NO:214. b is an integer of 15 to 1166, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:214, and where b is greater than or equal to a + 14.	
840063	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3309 of SEQ ID NO:215, b is an integer of 15 to 3323, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:215, and where b is greater than or equal to a + 14.	
840533	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1394 of SEQ ID NO:216, b is an integer of 15 to 1408, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:216, and where b is greater than or equal to a + 14.	
840669	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2097 of SEQ ID NO:217, b is an integer of 15 to 2111, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:217, and where b is greater than or equal to a + 14.	T71029, T79145, T79226, T99989, R59589, R61735, R61734, R66190, R67070, H16201, H16200, H22960, H84137, H85574, H98850, N23572, N26340, N56614, W72249, W76334, W86530, W87654, W87653, AA057869, AA122103, AA129545, AA136524, AA137122, AA429808, AA525242, AA558970, H99223, AA584317, AA595168, AA825180, AA931521, AA938437, AI017369, N29659, N68604, W86674, AA007246
841140	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2479 of SEQ ID NO:218, b is an integer of 15 to 2493, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:218, and where b is greater than or equal to a + 14.	
841386	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1245 of SEQ ID NO:219, b is an integer of 15 to 1259, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:219, and where b is greater than or equal to a + 14.	AA429393, AA429394, AA493187, AA807096, AA836046
841480	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1835 of SEQ ID NO:220, b is an integer of 15 to 1849, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:220, and where b is greater than or equal to a + 14.	
841509	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1253 of SEQ ID NO:221. b is an integer of 15 to 1267. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:221. and where b is greater than or equal to a + 14.	
841616	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 740 of SEQ ID NO:222. b is an integer of 15 to 754. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:222. and where b is greater than or equal to a + 14.	
841900	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1244 of SEQ ID NO:223. b is an integer of 15 to 1258. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:223. and where b is greater than or equal to a + 14.	R87848. AA806230. Z28656
842054	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 570 of SEQ ID NO:224, b is an integer of 15 to 584. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:224, and where b is greater than or equal to a + 14.	
843061	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 3435 of SEQ ID NO:225. b is an integer of 15 to 3449. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:225. and where b is greater than or equal to a + 14.	
843544	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1852 of SEQ ID NO:226, b is an integer of 15 to 1866, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:226. and where b is greater than or equal to a + 14.	
844092	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1050 of SEQ ID NO:227, b is an integer of 15 to 1064. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:227. and where b is greater than or equal to a + 14.	
844270	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 359 of SEQ ID NO:228, b is an integer of 15 to 373, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:228, and where b is greater than or equal to a + 14.	
844604	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2830 of SEQ ID NO:229, b is an integer of 15 to 2844, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:229, and where b is greater than or equal to a + 14.	
844685	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1784 of SEQ ID NO:230, b is an integer of 15 to 1798, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:230, and where b is greater than or equal to a + 14.	
844855	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1809 of SEQ ID NO:231, b is an integer of 15 to 1823, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:231, and where b is greater than or equal to a + 14.	
845101	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 956 of SEQ ID NO:232, b is an integer of 15 to 970, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:232, and where b is greater than or equal to a + 14.	
845141	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 953 of SEQ ID NO:233, b is an integer of 15 to 967, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:233, and where b is greater than or equal to a + 14.	
845220	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2149 of SEQ ID NO:234, b is an integer of 15 to 2163, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:234, and where b is greater than or equal to a + 14.	R70310, H02204, H28992, H29096, W67797, W67855, W72320, AA459289, AA459519, AA430385, AA746169
845434	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	

	where a is any integer between 1 to 1307 of SEQ ID NO:235. b is an integer of 15 to 1321. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:235. and where b is greater than or equal to a + 14.	
845510	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 669 of SEQ ID NO:236. b is an integer of 15 to 683. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:236. and where b is greater than or equal to a + 14.	
845600	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 2101 of SEQ ID NO:237. b is an integer of 15 to 2115, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:237, and where b is greater than or equal to a + 14.	
845882	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1628 of SEQ ID NO:238, b is an integer of 15 to 1642, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:238, and where b is greater than or equal to a + 14.	
846007	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 454 of SEQ ID NO:239. b is an integer of 15 to 468, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:239, and where b is greater than or equal to a + 14.	H81424
846280	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1315 of SEQ ID NO:240, b is an integer of 15 to 1329, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:240, and where b is greater than or equal to a + 14.	
846286	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b. where a is any integer between 1 to 1638 of SEQ ID NO:241, b is an integer of 15 to 1652, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:241, and where b is greater than or equal to a + 14.	
846388	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1932 of SEQ ID	

	NO:242. b is an integer of 15 to 1946. where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:242. and where b is greater than or equal to a + 14.	

Polynucleotide and Polypeptide Variants

The present invention is directed to variants of the polynucleotide sequence disclosed in SEQ ID NO:X or the complementary strand thereto, and/or the cDNA sequence contained in a cDNA clone contained in the deposit.

The present invention also encompasses variants of a colon and/or colon cancer polypeptide sequence disclosed in SEQ ID NO:Y, a polypeptide sequence encoded by the polynucleotide sequence in SEQ ID NO:X, and/or a polypeptide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

"Variant" refers to a polynucleotide or polypeptide differing from the polynucleotide or polypeptide of the present invention, but retaining essential properties thereof. Generally, variants are overall closely similar, and, in many regions, identical to the polynucleotide or polypeptide of the present invention.

The present invention is also directed to nucleic acid molecules which comprise, or alternatively consist of, a nucleotide sequence which is at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100%, identical to, for example, the nucleotide coding sequence in SEQ ID NO:X or the complementary strand thereto, the nucleotide coding sequence of the related cDNA contained in a deposited library or the complementary strand thereto, a nucleotide sequence encoding the polypeptide of SEQ ID NO:Y, a nucleotide sequence encoding a polypeptide sequence encoded by the nucleotide sequence in SEQ ID NO:X, a nucleotide sequence encoding the polypeptide encoded by the cDNA in the related cDNA contained in a deposited library, and/or polynucleotide fragments of any of these nucleic acid molecules (e.g., those fragments described herein). Polypeptides encoded by these nucleic acid molecules are also encompassed by the invention. In another embodiment, the invention encompasses nucleic acid molecules which comprise or alternatively consist of, a polynucleotide which hybridizes under stringent hybridization conditions, or alternatively, under low stringency conditions, to the nucleotide coding sequence in SEQ ID NO:X, the nucleotide coding sequence of the related cDNA clone contained in a deposited library, a nucleotide sequence encoding the polypeptide of SEQ ID NO:Y, a nucleotide sequence encoding a polypeptide sequence encoded by the nucleotide sequence in SEQ ID NO:X, a nucleotide sequence encoding the polypeptide encoded by the cDNA in the related cDNA clone contained in a deposited library, and/or polynucleotide fragments of any of these nucleic acid molecules (e.g., those fragments described herein). Polynucleotides which

hybridize to the complement of these nucleic acid molecules under stringent hybridization conditions or alternatively, under lower stringency conditions. are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

The present invention is also directed to polypeptides which comprise, or alternatively consist of, an amino acid sequence which is at least 80%, 85%, 90%, 95%, 96%, 97%. 98%. 99% or 100% identical to, for example. the polypeptide sequence shown in SEQ ID NO:Y, a polypeptide sequence encoded by the nucleotide sequence in SEQ ID NO:X, a polypeptide sequence encoded by the cDNA in the related cDNA clone contained in a deposited library, and/or polypeptide fragments of any of these polypeptides (e.g., those fragments described herein). Polynucleotides which hybridize to the complement of the nucleic acid molecules encoding these polypeptides under stringent hybridization conditions. or alternatively. under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

By a nucleic acid having a nucleotide sequence at least. for example, 95% "identical" to a reference nucleotide sequence of the present invention, it is intended that the nucleotide sequence of the nucleic acid is identical to the reference sequence except that the nucleotide sequence may include up to five point mutations per each 100 nucleotides of the reference nucleotide sequence encoding the polypeptide. In other words, to obtain a nucleic acid having a nucleotide sequence at least 95% identical to a reference nucleotide sequence, up to 5% of the nucleotides in the reference sequence may be deleted or substituted with another nucleotide, or a number of nucleotides up to 5% of the total nucleotides in the reference sequence may be inserted into the reference sequence. The query sequence may be, for example, an entire sequence referred to in Table 1, an ORF (open reading frame), or any fragment specified as described herein.

As a practical matter, whether any particular nucleic acid molecule or polypeptide is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a nucleotide sequence of the present invention can be determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence. also referred to as a global sequence alignment. can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci. 6:237-245 (1990)). In a sequence alignment the query and subject sequences are both DNA sequences. An RNA sequence can be

compared by converting U's to T's. The result of said global sequence alignment is in percent identity. Preferred parameters used in a FASTDB alignment of DNA sequences to calculate percent identiy are: Matrix=Unitary, k-tuple=4, Mismatch Penalty=1, Joining Penalty=30. Randomization Group Length=0, Cutoff Score=1, Gap Penalty=5, Gap Size Penalty 0.05, Window Size=500 or the lenght of the subject nucleotide sequence, whichever is shorter.

If the subject sequence is shorter than the query sequence because of 5' or 3' deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for 5' and 3' truncations of the subject sequence when calculating percent identity. For subject sequences truncated at the 5' or 3' ends, relative to the query sequence, the percent identity is corrected by calculating the number of bases of the query sequence that are 5' and 3' of the subject sequence, which are not matched/aligned, as a percent of the total bases of the query sequence. Whether a nucleotide is matched/aligned is determined by results of the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This corrected score is what is used for the purposes of the present invention. Only bases outside the 5' and 3' bases of the subject sequence, as displayed by the FASTDB alignment, which are not matched/aligned with the query sequence, are calculated for the purposes of manually adjusting the percent identity score.

For example, a 90 base subject sequence is aligned to a 100 base query sequence to determine percent identity. The deletions occur at the 5' end of the subject sequence and therefore, the FASTDB alignment does not show a matched/alignment of the first 10 bases at 5' end. The 10 unpaired bases represent 10% of the sequence (number of bases at the 5' and 3' ends not matched/total number of bases in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 bases were perfectly matched the final percent identity would be 90%. In another example, a 90 base subject sequence is compared with a 100 base query sequence. This time the deletions are internal deletions so that there are no bases on the 5' or 3' of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only bases 5' and 3' of the subject sequence which are not matched/aligned with the query sequence are manually corrected for. No other

manual corrections are to made for the purposes of the present invention.

By a polypeptide having an amino acid sequence at least, for example, 95% "identical" to a query amino acid sequence of the present invention, it is intended that the amino acid sequence of the subject polypeptide is identical to the query sequence except that the subject polypeptide sequence may include up to five amino acid alterations per each 100 amino acids of the query amino acid sequence. In other words, to obtain a polypeptide having an amino acid sequence at least 95% identical to a query amino acid sequence, up to 5% of the amino acid residues in the subject sequence may be inserted, deleted, (indels) or substituted with another amino acid. These alterations of the reference sequence may occur at the amino or carboxy terminal positions of the reference amino acid sequence or anywhere between those terminal positions, interspersed either individually among residues in the reference sequence or in one or more contiguous groups within the reference sequence.

As a practical matter, whether any particular polypeptide is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to, for instance, the amino acid sequence in SEQ ID NO:Y or a fragment thereof, the amino acid sequence encoded by the nucleotide sequence in SEQ ID NO:X or a fragment thereof, or the amino acid sequence encoded by the cDNA in the related cDNA clone contained in a deposited library, or a fragment thereof, can be determined conventionally using known computer programs. A preferred method for determing the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci.6:237- 245(1990)). In a sequence alignment the query and subject sequences are either both nucleotide sequences or both amino acid sequences. The result of said global sequence alignment is in percent identity. Preferred parameters used in a FASTDB amino acid alignment are: Matrix=PAM 0, k-tuple=2, Mismatch Penalty=1, Joining Penalty=20, Randomization Group Length=0, Cutoff Score=1, Window Size=sequence length, Gap Penalty=5, Gap Size Penalty=0.05, Window Size=500 or the length of the subject amino acid sequence, whichever is shorter.

If the subject sequence is shorter than the query sequence due to N- or C-terminal deletions. not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for N- and C-terminal truncations of the subject sequence when calculating global percent identity. For subject sequences

truncated at the N- and C-termini, relative to the query sequence, the percent identity is corrected by calculating the number of residues of the query sequence that are N- and C-terminal of the subject sequence, which are not matched/aligned with a corresponding subject residue, as a percent of the total bases of the query sequence. Whether a residue is matched/aligned is determined by results of the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This final percent identity score is what is used for the purposes of the present invention. Only residues to the N- and C-termini of the subject sequence, which are not matched/aligned with the query sequence. are considered for the purposes of manually adjusting the percent identity score. That is. only query residue positions outside the farthest N- and C- terminal residues of the subject sequence.

For example, a 90 amino acid residue subject sequence is aligned with a 100 residue query sequence to determine percent identity. The deletion occurs at the N-terminus of the subject sequence and therefore, the FASTDB alignment does not show a matching/alignment of the first 10 residues at the N-terminus. The 10 unpaired residues represent 10% of the sequence (number of residues at the N- and C- termini not matched/total number of residues in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 residues were perfectly matched the final percent identity would be 90%. In another example, a 90 residue subject sequence is compared with a 100 residue query sequence. This time the deletions are internal deletions so there are no residues at the N- or C-termini of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only residue positions outside the N- and C-terminal ends of the subject sequence, as displayed in the FASTDB alignment, which are not matched/aligned with the query sequence are manually corrected for. No other manual corrections are to made for the purposes of the present invention.

The variants may contain alterations in the coding regions, non-coding regions, or both. Especially preferred are polynucleotide variants containing alterations which produce silent substitutions, additions. or deletions, but do not alter the properties or activities of the encoded polypeptide. Nucleotide variants produced by silent substitutions due to the degeneracy of the genetic code are preferred. Moreover, variants in which less than 50, less

than 40, less than 30, less than 20, less than 10, or 5-50, 5-25, 5-10, 1-5, or 1-2 amino acids are substituted, deleted. or added in any combination are also preferred. Polynucleotide variants can be produced for a variety of reasons, e.g., to optimize codon expression for a particular host (change codons in the human mRNA to those preferred by a bacterial host such as E. coli).

Naturally occurring variants are called "allelic variants," and refer to one of several alternate forms of a gene occupying a given locus on a chromosome of an organism. (Genes II, Lewin, B., ed., John Wiley & Sons, New York (1985).) These allelic variants can vary at either the polynucleotide and/or polypeptide level and are included in the present invention. Alternatively, non-naturally occurring variants may be produced by mutagenesis techniques or by direct synthesis.

Using known methods of protein engineering and recombinant DNA technology, variants may be generated to improve or alter the characteristics of the polypeptides of the present invention. For instance, as discussed herein, one or more amino acids can be deleted from the N-terminus or C-terminus of the polypeptide of the present invention without substantial loss of biological function. The authors of Ron et al., J. Biol. Chem. 268: 2984-2988 (1993), reported variant KGF proteins having heparin binding activity even after deleting 3, 8, or 27 amino-terminal amino acid residues. Similarly, Interferon gamma exhibited up to ten times higher activity after deleting 8-10 amino acid residues from the carboxy terminus of this protein. (Dobeli et al., J. Biotechnology 7:199-216 (1988).)

Moreover, ample evidence demonstrates that variants often retain a biological activity similar to that of the naturally occurring protein. For example, Gayle and coworkers (J. Biol. Chem 268:22105-22111 (1993)) conducted extensive mutational analysis of human cytokine IL-1a. They used random mutagenesis to generate over 3,500 individual IL-1a mutants that averaged 2.5 amino acid changes per variant over the entire length of the molecule. Multiple mutations were examined at every possible amino acid position. The investigators found that "[m]ost of the molecule could be altered with little effect on either [binding or biological activity]." (See, Abstract.) In fact, only 23 unique amino acid sequences, out of more than 3,500 nucleotide sequences examined, produced a protein that significantly differed in activity from wild-type.

Furthermore, as discussed herein, even if deleting one or more amino acids from the N-terminus or C-terminus of a polypeptide results in modification or loss of one or more

biological functions, other biological activities may still be retained. For example, the ability of a deletion variant to induce and/or to bind antibodies which recognize the secreted form will likely be retained when less than the majority of the residues of the secreted form are removed from the N-terminus or C-terminus. Whether a particular polypeptide lacking N- or C-terminal residues of a protein retains such immunogenic activities can readily be determined by routine methods described herein and otherwise known in the art.

Thus, the invention further includes polypeptide variants which show a functional activity (e.g., biological activity) of the polypeptide of the invention of which they are a variant. Such variants include deletions, insertions, inversions, repeats, and substitutions selected according to general rules known in the art so as have little effect on activity.

The present application is directed to nucleic acid molecules at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to the nucleic acid sequences disclosed herein or fragments thereof, (e.g., including but not limited to fragments encoding a polypeptide having the amino acid sequence of an N and/or C terminal deletion), irrespective of whether they encode a polypeptide having functional activity. This is because even where a particular nucleic acid molecule does not encode a polypeptide having functional activity, one of skill in the art would still know how to use the nucleic acid molecule, for instance, as a hybridization probe or a polymerase chain reaction (PCR) primer. Uses of the nucleic acid molecules of the present invention that do not encode a polypeptide having functional activity include, inter alia, (1) isolating a gene or allelic or splice variants thereof in a cDNA library; (2) in situ hybridization (e.g., "FISH") to metaphase chromosomal spreads to provide precise chromosomal location of the gene, as described in Verma et al., Human Chromosomes: A Manual of Basic Techniques, Pergamon Press, New York (1988); and (3) Northern Blot analysis for detecting mRNA expression in specific tissues.

Preferred, however, are nucleic acid molecules having sequences at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to the nucleic acid sequences disclosed herein, which do, in fact, encode a polypeptide having a functional activity of a polypeptide of the invention.

Of course, due to the degeneracy of the genetic code, one of ordinary skill in the art will immediately recognize that a large number of the nucleic acid molecules having a sequence at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99%, or 100% identical to, for example, the nucleic acid sequence of the cDNA in the related cDNA clone contained in a

deposited library, the nucleic acid sequence referred to in Table 1 (SEQ ID NO:X), or fragments thereof, will encode polypeptides "having functional activity." In fact, since degenerate variants of any of these nucleotide sequences all encode the same polypeptide, in many instances, this will be clear to the skilled artisan even without performing the above described comparison assay. It will be further recognized in the art that, for such nucleic acid molecules that are not degenerate variants, a reasonable number will also encode a polypeptide having functional activity. This is because the skilled artisan is fully aware of amino acid substitutions that are either less likely or not likely to significantly effect protein function (e.g., replacing one aliphatic amino acid with a second aliphatic amino acid), as further described below.

For example, guidance concerning how to make phenotypically silent amino acid substitutions is provided in Bowie et al., "Deciphering the Message in Protein Sequences: Tolerance to Amino Acid Substitutions," Science 247:1306-1310 (1990), wherein the authors indicate that there are two main strategies for studying the tolerance of an amino acid sequence to change.

The first strategy exploits the tolerance of amino acid substitutions by natural selection during the process of evolution. By comparing amino acid sequences in different species, conserved amino acids can be identified. These conserved amino acids are likely important for protein function. In contrast, the amino acid positions where substitutions have been tolerated by natural selection indicates that these positions are not critical for protein function. Thus, positions tolerating amino acid substitution could be modified while still maintaining biological activity of the protein.

The second strategy uses genetic engineering to introduce amino acid changes at specific positions of a cloned gene to identify regions critical for protein function. For example, site directed mutagenesis or alanine-scanning mutagenesis (introduction of single alanine mutations at every residue in the molecule) can be used. (Cunningham and Wells, Science 244:1081-1085 (1989).) The resulting mutant molecules can then be tested for biological activity.

As the authors state, these two strategies have revealed that proteins are surprisingly tolerant of amino acid substitutions. The authors further indicate which amino acid changes are likely to be permissive at certain amino acid positions in the protein. For example, most buried (within the tertiary structure of the protein) amino acid residues require nonpolar side

chains, whereas few features of surface side chains are generally conserved. Moreover, tolerated conservative amino acid substitutions involve replacement of the aliphatic or hydrophobic amino acids Ala, Val, Leu and Ile; replacement of the hydroxyl residues Ser and Thr; replacement of the acidic residues Asp and Glu; replacement of the amide residues Asn and Gln, replacement of the basic residues Lys, Arg, and His; replacement of the aromatic residues Phe, Tyr, and Trp, and replacement of the small-sized amino acids Ala, Ser, Thr, Met, and Gly. Besides conservative amino acid substitution, variants of the present invention include (i) substitutions with one or more of the non-conserved amino acid residues, where the substituted amino acid residues may or may not be one encoded by the genetic code, or (ii) substitution with one or more of amino acid residues having a substituent group, or (iii) fusion of the mature polypeptide with another compound, such as a compound to increase the stability and/or solubility of the polypeptide (for example, polyethylene glycol), or (iv) fusion of the polypeptide with additional amino acids, such as, for example, an IgG Fc fusion region peptide, or leader or secretory sequence, or a sequence facilitating purification. Such variant polypeptides are deemed to be within the scope of those skilled in the art from the teachings herein.

For example, polypeptide variants containing amino acid substitutions of charged amino acids with other charged or neutral amino acids may produce proteins with improved characteristics, such as less aggregation. Aggregation of pharmaceutical formulations both reduces activity and increases clearance due to the aggregate's immunogenic activity. (Pinckard et al., Clin. Exp. Immunol. 2:331-340 (1967); Robbins et al., Diabetes 36: 838-845 (1987); Cleland et al., Crit. Rev. Therapeutic Drug Carrier Systems 10:307-377 (1993).)

A further embodiment of the invention relates to a polypeptide which comprises the amino acid sequence of a polypeptide having an amino acid sequence which contains at least one amino acid substitution, but not more than 50 amino acid substitutions, even more preferably, not more than 40 amino acid substitutions, still more preferably, not more than 30 amino acid substitutions, and still even more preferably, not more than 20 amino acid substitutions. Of course it is highly preferable for a polypeptide to have an amino acid sequence which comprises the amino acid sequence of a polypeptide of SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X, and/or the amino acid sequence encoded by the cDNA in the related cDNA clone contained in a deposited library which contains, in order of ever-increasing preference, at least one, but not more than 10, 9, 8, 7, 6, 5, 4, 3, 2 or 1

amino acid substitutions. In specific embodiments, the number of additions, substitutions, and/or deletions in the amino acid sequence of SEQ ID NO:Y or fragments thereof (e.g., the mature form and/or other fragments described herein), an amino acid sequence encoded by SEQ ID NO:X or fragments thereof, and/or the amino acid sequence encoded by the cDNA in the related cDNA clone contained in a deposited library or fragments thereof, is 1-5, 5-10, 5-25, 5-50, 10-50 or 50-150, conservative amino acid substitutions are preferable.

Polynucleotide and Polypeptide Fragments

The present invention is also directed to polynucleotide fragments of the colon and/or colon cancer polynucleotides (nucleic acids) of the invention. In the present invention, a "polynucleotide fragment" refers, for example, to a polynucleotide having a nucleic acid sequence which: is a portion of the cDNA contained in a depostied cDNA clone; or is a portion of a polynucleotide sequence encoding the polypeptide encoded by the cDNA contained in a deposited cDNA clone; or is a portion of the polynucleotide sequence in SEQ ID NO:X or the complementary strand thereto; or is a polynucleotide sequence encoding a portion of the polypeptide of SEQ ID NO:Y; or is a polynucleotide sequence encoding a portion of a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto. The nucleotide fragments of the invention are preferably at least about 15 nt, and more preferably at least about 20 nt, still more preferably at least about 30 nt, and even more preferably, at least about 40 nt, at least about 50 nt, at least about 75 nt, at least about 100 nt, at least about 125 nt or at least about 150 nt in length. A fragment "at least 20 nt in length," for example, is intended to include 20 or more contiguous bases from, for example, the sequence contained in the cDNA in a related cDNA clone contained in a deposited library, the nucleotide sequence shown in SEQ ID NO:X or the complementary stand thereto. In this context "about" includes the particularly recited value or a value larger or smaller by several (5, 4, 3, 2, or 1) nucleotides. These nucleotide fragments have uses that include, but are not limited to, as diagnostic probes and primers as discussed herein. Of course, larger fragments (e.g., at least 150, 175, 200, 250, 500, 600, 1000, or 2000 nucleotides in length) are also encompassed by the invention.

Moreover, representative examples of polynucleotide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-

400, 401-450. 451-500, 501-550. 551-600. 651-700,701- 750. 751-800. 800-850. 851-900, 901-950, 951-1000, 1001-1050, 1051-1100. 1101-1150, 1151-1200. 1201-1250, 1251-1300, 1301-1350. 1351-1400, 1401-1450, 1451-1500. 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100. 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-2450, 2451-2500. 2501-2550, 2551-2600. 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000. 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, 3551-3600. 3601-3650, 3651-3700, 3701-3750, 3751-3800, 3801-3850, 3851-3900, 3901-3950, 3951-4000, 4001-4050, 4051-4100, and 4101 to the end of SEQ ID NO:X, or the complementary strand thereto. In this context "about" includes the particularly recited range or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides. at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity) of the polypeptide encoded by the polynucleotide of which the sequence is a portion. More preferably, these fragments can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these nucleic acid molecules under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides or fragments.

Moreover, representative examples of polynucleotide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 651-700,701- 750, 751-800, 800-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000. 3001-3050, 3051-3100, 3101-3150, 3151-3200. 3201-3250. 3251-3300, 3301-3350. 3351-3400, 3401-3450, 3451-3500, 3501-3550, 3551-3600, 3601-3650, 3651-3700, 3701-3750, 3751-3800, 3801-3850, 3851-3900, 3901-3950, 3951-4000, 4001-4050, 4051-4100. and 4101 to the end of the cDNA nucleotide

sequence contained in the deposited cDNA clone, or the complementary strand thereto. In this context "about" includes the particularly recited range, or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity) of the polypeptide encoded by the cDNA nucleotide sequence contained in the deposited cDNA clone. More preferably, these fragments can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these fragments under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides or fragments.

In the present invention, a "polypeptide fragment" refers to an amino acid sequence which is a portion of that contained in SEQ ID NO:Y, a portion of an amino acid sequence encoded by the polynucleotide sequence of SEQ ID NO:X, and/or encoded by the cDNA contained in the related cDNA clone contained in a deposited library. Protein (polypeptide) fragments may be "free-standing," or comprised within a larger polypeptide of which the fragment forms a part or region, most preferably as a single continuous region. Representative examples of polypeptide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, an amino acid sequence from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 102-120, 121-140, 141-160, 161-180, 181-200, 201-220, 221-240, 241-260, 261-280, 281-300, 301-320, 321-340, 341-360, 361-380, 381-400, 401-420, 421-440, 441-460, 461-480, 481-500, 501-520, 521-540, 541-560, 561-580, 581-600, 601-620, 621-640, 641-660, 661-680, 681-700, 701-720, 721-740, 741-760, 761-780, 781-800, 801-820, 821-840, 841-860, 861-880, 881-900, 901-920, 921-940, 941-960, 961-980, 981-1000, 1001-1020, 1021-1040, 1041-1060, 1061-1080, 1081-1100, 1101-1120, 1121-1140, 1141-1160, 1161-1180, 1181-1200, 1201-1220, 1221-1240, 1241-1260, 1261-1280, 1281-1300, 1301-1320, 1321-1340, 1341-1360, and 1361 to the end of SEQ ID NO:Y. Moreover, polypeptide fragments of the invention may be at least about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 100, 110, 120, 130, 140, or 150 amino acids in length. In this context "about" includes the particularly recited ranges or values, or ranges or values larger or smaller by several (5, 4, 3, 2, or 1) amino acids, at either terminus or at both termini. Polynucleotides encoding these polypeptide fragments are also encompassed by the invention.

Even if deletion of one or more amino acids from the N-terminus of a protein results in modification of loss of one or more biological functions of the protein, other functional activities (e.g., biological activities, ability to multimerize, ability to bind a ligand) may still be retained. For example, the ability of shortened muteins to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptides generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the N-terminus. Whether a particular polypeptide lacking N-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted N-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

Accordingly, polypeptide fragments of the invention include the secreted protein as well as the mature form. Further preferred polypeptide fragments include the secreted protein or the mature form having a continuous series of deleted residues from the amino or the carboxy terminus, or both. For example, any number of amino acids, ranging from 1-60, can be deleted from the amino terminus of either the secreted polypeptide or the mature form. Similarly, any number of amino acids, ranging from 1-30, can be deleted from the carboxy terminus of the secreted protein or mature form. Furthermore, any combination of the above amino and carboxy terminus deletions are preferred. Similarly, polynucleotides encoding these polypeptide fragments are also preferred.

The present invention further provides polypeptides having one or more residues deleted from the amino terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X, and/or a polypeptide encoded by the cDNA contained in the related cDNA clone contained in a deposited library). In particular, N-terminal deletions may be described by the general formula m-q, where q is a whole integer representing the total number of amino acid residues in a polypeptide of the invention (e.g., the polypeptide disclosed in SEQ ID NO:Y), and m is defined as any integer ranging from 2 to q-6. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Also as mentioned above, even if deletion of one or more amino acids from the C-terminus of a protein results in modification of loss of one or more biological functions of

the protein, other functional activities (e.g., biological activities, ability to multimerize, ability to bind a ligand) may still be retained. For example the ability of the shortened mutein to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptide generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the C-terminus. Whether a particular polypeptide lacking C-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted C-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

Accordingly, the present invention further provides polypeptides having one or more residues from the carboxy terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X, and/or a polypeptide encoded by the cDNA contained in the related cDNA referenced in Table 1). In particular, C-terminal deletions may be described by the general formula 1-n, where n is any whole integer ranging from 6 to q-1, and where n corresponds to the position of an amino acid residue in a polypeptide of the invention. Polynucleotides encoding these polypeptides are also encompassed by the invention.

In addition, any of the above described N- or C-terminal deletions can be combined to produce a N- and C-terminal deleted polypeptide. The invention also provides polypeptides having one or more amino acids deleted from both the amino and the carboxyl termini, which may be described generally as having residues m-n of a polypeptide encoded by SEQ ID NO:X (e.g., including, but not limited to, the preferred polypeptide disclosed as SEQ ID NO:Y), and/or the cDNA in the related cDNA clone contained in a deposited library, where n and m are integers as described above. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Any polypeptide sequence contained in the polypeptide of SEQ ID NO:Y, encoded by the polynucleotide sequences set forth as SEQ ID NO:X, or encoded by the cDNA in the related cDNA clone contained in a deposited library may be analyzed to determine certain preferred regions of the polypeptide. For example, the amino acid sequence of a polypeptide encoded by a polynucleotide sequence of SEQ ID NO:X, or the cDNA in a deposited cDNA

clone may be analyzed using the default parameters of the DNASTAR computer algorithm (DNASTAR. Inc., 1228 S. Park St.. Madison, WI 53715 USA; http://www.dnastar.com/).

Polypeptide regions that may be routinely obtained using the DNASTAR computer algorithm include, but are not limited to, Garnier-Robson alpha-regions, beta-regions, turn-regions. and coil-regions, Chou-Fasman alpha-regions, beta-regions, and turn-regions, Kyte-Doolittle hydrophilic regions and hydrophobic regions, Eisenberg alpha- and beta-amphipathic regions, Karplus-Schulz flexible regions, Emini surface-forming regions and Jameson-Wolf regions of high antigenic index. Among highly preferred polynucleotides of the invention in this regard are those that encode polypeptides comprising regions that combine several structural features, such as several (e.g., 1, 2, 3 or 4) of the features set out above.

Additionally, Kyte-Doolittle hydrophilic regions and hydrophobic regions. Emini surface-forming regions, and Jameson-Wolf regions of high antigenic index (i.e., containing four or more contiguous amino acids having an antigenic index of greater than or equal to 1.5, as identified using the default parameters of the Jameson-Wolf program) can routinely be used to determine polypeptide regions that exhibit a high degree of potential for antigenicity. Regions of high antigenicity are determined from data by DNASTAR analysis by choosing values which represent regions of the polypeptide which are likely to be exposed on the surface of the polypeptide in an environment in which antigen recognition may occur in the process of initiation of an immune response.

Preferred polypeptide fragments of the invention are fragments comprising, or alternatively consisting of, an amino acid sequence that displays a functional activity of the polypeptide sequence of which the amino acid sequence is a fragment.

By a polypeptide demonstrating a "functional activity" is meant, a polypeptide capable of displaying one or more known functional activities associated with a full-length (complete) protein of the invention. Such functional activities include, but are not limited to, biological activity, antigenicity [ability to bind (or compete with a polypeptide for binding) to an anti-polypeptide antibody], immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention. and ability to bind to a receptor or ligand for a polypeptide.

Other preferred polypeptide fragments are biologically active fragments. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an

activity of the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

In preferred embodiments, polypeptides of the invention comprise, or alternatively consist of, one, two, three, four, five or more of the antigenic fragments of the polypeptide of SEQ ID NO:Y, or portions thereof. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Table 4.

Sequence/ Contig ID	Predicted Epitopes
500802	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 774 as residues: Gln-1 to Ser-17. Ser-19 to Ile-25. Leu-29 to Arg-41. Ser-46 to Glu-57.
553147	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 776 as residues: Phe-1 to Ile-20.
558860	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 777 as residues: Ser-6 to Arg-11..
561730	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 778 as residues: Asn-1 to Arg-7. Leu-28 to Pro-45.
585938	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 779 as residues: Arg-10 to Ser-23. Gln-69 to His-74.
587785	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 780 as residues: Ile-1 to Ser-11. Leu-20 to Thr-30. Cys-74 to Cys-82. Leu-94 to Glu-110.
588916	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 781 as residues: Val-43 to Pro-55. Glu-92 to Ser-99.
613825	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 782 as residues: Asn-1 to Trp-11. Ser-15 to Gln-22. Ser-43 to Ala-51. Lys-58 to Gly-66.
639090	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 783 as residues: Ser-29 to Ser-35. Pro-43 to Gly-48. Gln-60 to Ser-65.
659544	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 785 as residues: Leu-10 to Glu-15. His-19 to Glu-26.
659739	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 786 as residues: Lys-70 to His-78, Lys-149 to Asn-154, Gly-209 to Leu-217. Lys-248 to Val-255. Ile-259 to Arg-264. Arg-280 to Ala-287.
661057	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 787 as residues: Cys-59 to Arg-64. Gly-110 to Asp-115. Pro-127 to Trp-132.
661313	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 788 as residues: Glu-1 to Phe-7. Lys-42 to Leu-48.
666316	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 789 as residues: Lys-27 to Asn-52.
669229	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 790 as residues: Asp-1 to Phe-12. Val-92 to Ser-103.
670471	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 791 as residues: Lys-75 to Asp-81, Glu-145 to Gln-156. Glu-163 to Arg-170. Lys-225 to Leu-231.
676611	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 792 as residues: Tyr-4 to Lys-12. Thr-23 to Asn-31. Val-52 to Thr-63. Arg-90 to Met-95.
691240	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 793 as residues: Pro-74 to Glu-79. Ser-116 to Lys-121.
702977	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 794 as residues: Pro-8 to Tyr-20.
709517	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 795 as residues: Leu-7 to Gly-12. Cys-20 to His-27.
714730	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 796 as residues: Pro-14 to Arg-23. Ala-171 to Ser-178.
714834	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 797 as residues: Ala-6 to Gly-12. Gln-18 to Arg-32.
719584	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 799 as residues: Pro-22 to Ile-31.
724637	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 800 as residues: Val-11 to Arg-34. Asn-54 to Cys-59.
728392	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 801 as

	residues: Arg-31 to Glu-45. Gly-76 to Pro-88. Asn-143 to Asp-148.
738716	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 802 as residues: Pro-40 to Pro-46.
739056	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 803 as residues: Ser-28 to Ala-33. Pro-44 to Phe-49, Arg-113 to Gly-118. Pro-131 to Arg-142. Asp-155 to Leu-166.
739143	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 804 as residues: Ala-1 to Gly-14. Glu-21 to Gly-27. Asp-54 to Lys-59. Lys-64 to Glu-71. Gln-92 to Leu-97. Asn-114 to His-120. Leu-135 to Asp-142. Glu-149 to Ser-154. Ser-256 to Thr-261. Asp-290 to Lys-301. Glu-315 to Gln-323, Lys-331 to Asn-342. Arg-346 to Met-361.
742329	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 805 as residues: Arg-7 to Ala-13. Gln-21 to Ser-27. Gln-68 to Gly-73. Pro-75 to Val-88.
745481	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 807 as residues: Asn-1 to Lys-14. Arg-32 to His-39. Asn-46 to Gly-51.
753731	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 809 as residues: Arg-22 to Ser-39. Val-42 to Thr-54. Gln-61 to His-69.
754383	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 810 as residues: Ala-2 to Gly-12.
756749	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 811 as residues: His-1 to Thr-11. Thr-13 to Ser-18. Gly-25 to Gly-30. Pro-63 to Pro-69. Glu-84 to Tyr-101. Asn-110 to Ala-140.
757980	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 812 as residues: Phe-9 to His-21.
764818	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 813 as residues: Pro-12 to Trp-17, Asn-22 to Ala-37. Arg-45 to Gly-54, Asp-72 to Thr-95. Pro-97 to Glu-116. Gly-137 to Lys-151. Glu-164 to Asp-171, Ser-175 to Gly-185. Glu-187 to Gly-213. Lys-270 to Glu-276, Leu-281 to Lys-286. Asp-314 to Gly-321. Glu-324 to Glu-331. Val-333 to Arg-340.
765140	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 814 as residues: Thr-15 to Asp-27.
766893	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 815 as residues: Arg-6 to Leu-11. Arg-21 to Tyr-27. Phe-37 to Lys-46. Gly-59 to Gly-64.
771412	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 817 as residues: Pro-1 to His-6. Pro-37 to Arg-47.
772226	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 818 as residues: Phe-16 to Arg-30. Glu-35 to Trp-58. Lys-60 to Gln-68. Pro-80 to Tyr-85.
773057	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 819 as residues: Gly-37 to Arg-43.
773173	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 820 as residues: Pro-19 to Asn-26.
780154	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 821 as residues: Arg-20 to Ile-31, Pro-34 to Ala-59, Glu-66 to Pro-125, Leu-132 to Lys-137, Lys-155 to Arg-259.
780768	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 822 as residues: Phe-12 to Lys-17.
780779	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 823 as residues: Ser-1 to Ser-11. Gln-64 to Gln-69. Arg-117 to Arg-127.
782394	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 824 as residues: Phe-18 to Gly-24.
783160	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 825 as residues: Lys-35 to Lys-41. Thr-50 to His-56. Thr-110 to Gly-119.
783506	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 826 as residues: Thr-3 to Thr-9.
792139	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 830 as residues: Arg-1 to Thr-13. Arg-21 to Pro-30. Ser-70 to Arg-79. Asp-89 to Arg-101.

805715	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 832 as residues: Met-7 to Ala-17. Arg-26 to Leu-32. Lys-47 to Lys-52. Asn-67 to Asn-72. Val-77 to Tyr-82. Pro-101 to Arg-107. Arg-137 to Arg-146. Ser-168 to Thr-173. Asp-189 to Lys-199.
811111	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 833 as residues: His-24 to Asn-31.
811113	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 834 as residues: Gln-1 to Ala-9. Cys-56 to Gly-61. Trp-105 to Thr-110. Arg-150 to Thr-155. Leu-189 to Lys-195.
823902	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 835 as residues: Thr-18 to Glu-23.
826518	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 836 as residues: Ile-20 to Lys-26. Cys-39 to Arg-46.
826704	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 837 as residues: His-14 to Phe-20. Glu-70 to Leu-83.
828180	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 840 as residues: Glu-38 to Arg-52. Ser-56 to Val-62.
828658	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 842 as residues: Asp-1 to Pro-12. Gly-59 to Lys-64. Asp-70 to Leu-76. Pro-160 to Pro-166. Thr-174 to Asn-179.
828919	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 843 as residues: Thr-49 to Val-54. Leu-83 to Lys-91. Gly-121 to Thr-130, Asp-165 to Glu-172, Thr-180 to Gly-188.
830208	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 846 as residues: Lys-49 to Asn-56. Glu-61 to Ala-67.
830248	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 847 as residues: Pro-17 to Asp-36. Pro-102 to Glu-108, Pro-122 to Lys-128, His-150 to Gly-155. Asn-162 to Tyr-168. Pro-186 to Gln-193. Ser-205 to Pro-211. Gln-305 to Gly-317.
830275	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 848 as residues: Ser-16 to Glu-22, Asn-45 to Ser-50. Thr-121 to Gly-136, Lys-150 to Arg-157, Ser-175 to Cys-181. Gly-198 to Ser-203.
830286	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 849 as residues: His-11 to Pro-18. Thr-241 to Thr-258. Ala-352 to Ala-365.
830347	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 850 as residues: Asp-33 to Ala-39.
830348	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 851 as residues: Gln-5 to Arg-15. Ile-96 to Asn-101. Asp-122 to Gly-128.
830364	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 852 as residues: Val-76 to Asn-82. Lys-87 to Tyr-94. Glu-118 to Gln-125, Pro-140 to Ile-145, Gly-149 to Pro-173. Ala-215 to Lys-222. Lys-230 to Gly-235. Pro-250 to Asn-256, Ser-302 to Arg-307. Ser-321 to Glu-332.
830394	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 853 as residues: Thr-37 to Thr-44, Leu-57 to Ser-63. Ser-74 to Lys-86, Gln-107 to Leu-112, Lys-140 to Ala-145. Asp-154 to Ser-163.
830412	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 855 as residues: His-65 to Gly-74, Asp-85 to Ser-97. Leu-133 to Glu-138. Glu-144 to Asp-153, Arg-170 to Ser-175. Gly-184 to Arg-189. Gln-202 to Tyr-208.
830464	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 857 as residues: Val-3 to Val-11, Gln-16 to Gln-27. Glu-41 to Asp-51.
830471	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 858 as residues: Glu-10 to His-22. Ser-37 to Lys-45.
830477	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 859 as residues: Lys-1 to Cys-13, Thr-32 to Cys-37, Ser-44 to Glu-50. Glu-57 to Asn-64. Glu-85 to Glu-93. Ala-129 to Ser-139, Gln-157 to Thr-185. Gln-199 to Gly-215. Ile-241 to Leu-247, Asp-254 to Leu-263, Gln-265 to Gln-270. Glu-298 to Gln-309. Glu-316 to Ala-321. Leu-325 to Glu-334. Glu-340 to Ser-345. Leu-348 to His-367. Lys-384 to Arg-391.

	Leu-409 to Asn-417, Arg-431 to Arg-437, Phe-441 to Leu-448, Ala-456 to Glu-484, Lys-509 to Val-519, Glu-521 to Asp-528, Asp-546 to Phe-553, Glu-558 to Phe-567, Pro-573 to Thr-588.
830500	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 860 as residues: Gln-27 to Gly-34.
830509	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 861 as residues: Pro-2 to Asp-7, Gln-13 to Gln-29, Pro-35 to Trp-41.
830528	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 862 as residues: Gln-1 to Arg-12, Asp-22 to Pro-44, Lys-52 to Asp-62, Pro-68 to Lys-93, Pro-99 to Pro-129, Ala-138 to Ser-150, Lys-156 to Val-194, Ile-197 to Glu-210, Ala-213 to Ala-287, Leu-289 to Lys-327, Lys-330 to Gly-340, Asp-344 to Gln-360, Ile-396 to Thr-401, Lys-409 to Asp-418, Met-450 to Ala-460, Glu-468 to Gly-475.
830542	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 863 as residues: Val-1 to Gly-10, Arg-24 to Asp-36, Leu-225 to Trp-231, Val-249 to Met-258, Glu-262 to Thr-269, Val-279 to Gly-284, Asp-307 to Asn-313, Arg-411 to Lys-416.
830564	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 864 as residues: Trp-103 to Glu-113, Lys-118 to Tyr-125.
830611	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 865 as residues: Glu-51 to Ser-57, Arg-128 to Ala-133.
830620	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 867 as residues: Lys-54 to Arg-59, Arg-66 to Arg-71.
830630	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 868 as residues: Pro-12 to Gly-17.
830654	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 869 as residues: Leu-1 to Asp-6.
830660	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 870 as residues: Lys-111 to Trp-116, Glu-139 to Gly-148, Arg-182 to Ser-189.
830704	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 872 as residues: Asn-1 to Glu-8, Ala-38 to Gly-46, Gln-58 to Asp-71, Ala-75 to Cys-103, Met-106 to Ala-140, Gln-153 to Ile-159.
830765	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 873 as residues: Ser-19 to Thr-26, Pro-47 to Thr-59.
830778	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 874 as residues: Asp-35 to Gly-40, Glu-104 to Glu-109, Ser-226 to Tyr-231.
830784	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 875 as residues: Pro-34 to Leu-41.
830800	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 876 as residues: Ser-16 to Lys-24, Gly-91 to Thr-96.
830821	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 877 as residues: Leu-2 to Thr-8, Asp-15 to Gly-26, Phe-64 to Ser-70, Pro-77 to Trp-82, Pro-85 to Lys-90.
830849	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 878 as residues: Leu-2 to Ser-18, Gly-31 to Ser-40, Asn-56 to Thr-86, Asp-114 to Arg-120.
830903	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 879 as residues: Thr-21 to Thr-33.
830913	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 880 as residues: Gly-48 to Pro-53, Gln-66 to Pro-74, Thr-151 to Gly-156, Asn-292 to Asn-297.
830920	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 881 as residues: Asp-15 to Ser-25, Ser-33 to Val-38, Lys-181 to Phe-187.
830938	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 882 as residues: Thr-65 to Asp-70, Leu-89 to Ala-95.
831014	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 884 as residues: Ala-2 to Gln-11, Glu-71 to Leu-78, Leu-89 to Trp-98, Ser-163 to Ala-170, Glu-261 to Asp-269, Phe-286 to Val-292.
831026	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 885 as residues: Lys-41 to Gly-46, Tyr-64 to Phe-75.

831055	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 887 as residues: Trp-37 to His-50. Lys-108 to Phe-114. Lys-131 to Thr-137. Arg-351 to Ser-356. Pro-363 to Cys-369. Glu-390 to Asp-397.
831057	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 888 as residues: Arg-1 to Gly-14. Thr-19 to Gly-25. Ala-31 to Ala-41. Glu-53 to Ile-62. Val-66 to Glu-75. Ser-103 to Asp-113. Ala-135 to Asp-140.
831062	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 889 as residues: Ser-24 to Ala-31.
831117	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 890 as residues: Lys-50 to Tyr-55.
831122	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 891 as residues: Phe-8 to Gly-14. Arg-58 to Gly-68. Lys-107 to Ser-131. Gln-151 to Val-160, Lys-180 to Lys-186. Lys-211 to Thr-223.
831132	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 893 as residues: Gly-1 to Ser-16.
831152	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 894 as residues:. Ser-8 to Arg-13. Lys-59 to Ala-65. Glu-71 to Glu-86. Leu-98 to His-108. Arg-118 to Ile-126. His-138 to Ala-145. Pro-148 to Tyr-156. Pro-170 to Ala-175. Val-187 to Lys-194. Glu-206 to Val-217. Gly-221 to Ser-226. Asp-250 to Lys-255.
831157	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 895 as residues: Val-1 to Asn-11, Glu-13 to Gly-25. Ser-31 to Ala-49. Arg-61 to Gly-66. Ala-84 to Ala-90.
831160	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 896 as residues: His-1 to Ala-7, Asp-43 to Lys-52. Tyr-98 to Gly-103. Glu-118 to Leu-125. Phe-183 to Tyr-195. Gln-209 to Arg-220. Ile-257 to Gly-262. Glu-278 to Thr-284. Ile-309 to Pro-314, Leu-339 to Asp-347. Ala-358 to Gln-388, Gln-401 to Leu-414. Glu-425 to Ala-440. Ala-448 to Glu-453. Ile-460 to Gln-465. Glu-482 to Glu-492. Ala-498 to Glu-511, Pro-520 to Val-526, Gly-556 to Gln-577, Leu-587 to His-598. Glu-605 to Asp-630.
831197	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 898 as residues: Ser-28 to Leu-39. Phe-48 to Phe-55. Pro-60 to Gln-66. Arg-73 to Thr-78.
831217	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 899 as residues: Asp-52 to Val-63. Asn-75 to Glu-83.
831248	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 901 as residues: Pro-24 to Gly-34. Lys-108 to Arg-118.
831369	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 903 as residues: Ala-1 to Gly-8.
831371	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 904 as residues: Arg-39 to Ser-44. Arg-66 to Arg-76.
831373	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 905 as residues: Gly-7 to Ser-13, Gln-40 to Trp-45, Lys-109 to Gly-116. Gly-134 to Arg-141, Arg-149 to Arg-164, Arg-174 to Phe-181, Lys-202 to Lys-210, Glu-263 to Leu-272, Pro-274 to Leu-280, Glu-289 to Glu-296, Pro-334 to His-341. Tyr-413 to Pro-426, Glu-432 to Lys-449.
831387	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 906 as residues: Tyr-21 to Leu-28. Cys-51 to Phe-72, Ser-107 to Leu-113. Leu-125 to Leu-134, Ser-142 to Ala-152. His-159 to Tyr-164. Arg-276 to Val-290.
831410	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 907 as residues: Arg-7 to Lys-13. Pro-28 to Cys-34. Gly-100 to Asn-109. Cys-155 to Arg-162.
831448	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 908 as residues: Ala-10 to Cys-20, Tyr-36 to Lys-41, Asp-68 to Ala-75. Ala-84 to Arg-89. Glu-112 to Ser-119.
831450	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 909 as residues: Pro-23 to Gly-28. Thr-52 to Pro-63.
831472	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 910 as residues: Ser-16 to Ala-26.

831473	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 911 as residues: Arg-37 to Gln-42, Asn-59 to Asn-65, Asn-109 to Val-121, Arg-191 to Glu-199, Lys-205 to Ile-214.
831474	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 912 as residues: Glu-1 to Leu-8, Ser-50 to Arg-56, Thr-61 to Arg-66, Val-69 to Arg-82.
831494	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 913 as residues: Arg-21 to Ser-27, Arg-77 to Asp-82, Glu-116 to Ile-134, Ser-139 to Ser-162, Leu-167 to Gly-190, Cys-192 to Gly-205.
831506	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 914 as residues: Val-6 to Tyr-12, Lys-77 to Ala-82, Ser-102 to Arg-108, Ser-145 to Ser-151.
831533	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 915 as residues: Thr-9 to Cys-16, Arg-52 to Tyr-57, Ser-61 to Ser-69.
831539	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 916 as residues: Thr-32 to Arg-39, Cys-44 to Arg-60, Lys-65 to Gln-70, Gly-78 to Ile-86, Lys-126 to Thr-134, Leu-140 to Glu-148.
831556	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 917 as residues: Gly-45 to Asp-52.
831598	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 919 as residues: Asn-1 to Val-6, Phe-76 to Tyr-83, Gly-129 to Gln-135, Thr-145 to Asp-153, Pro-213 to Gln-220, Thr-230 to Asn-236, Lys-242 to Ala-248.
831608	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 920 as residues: Thr-23 to Pro-34, Glu-39 to Asp-83, Asn-89 to Lys-99, Asp-118 to Asp-128, Asn-135 to Glu-150, Glu-153 to Gly-168, Gly-181 to Thr-187, Arg-200 to Asp-205, Arg-273 to Ile-279, Thr-295 to Asp-300, Thr-316 to Cys-321.
831613	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 921 as residues: Pro-1 to Glu-7, Arg-9 to Phe-15, Thr-27 to Gly-34.
831655	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 926 as residues: Tyr-31 to Gln-38.
831708	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 927 as residues: Glu-22 to Ile-27, Gly-43 to Gly-49, His-83 to Arg-105.
831741	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 929 as residues: Asp-22 to Asp-27, Pro-64 to Gln-74, Ser-126 to Gly-131, Lys-134 to Arg-143, Arg-150 to Gly-162, Gln-180 to Tyr-196, Asp-209 to Leu-224, Gly-233 to Gly-241, Pro-246 to Arg-251.
831754	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 930 as residues: Arg-40 to Glu-50, Gly-57 to Gly-68, Phe-72 to Tyr-79.
831760	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 931 as residues: His-24 to Asp-39.
831780	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 932 as residues: Arg-92 to Thr-101.
831796	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 933 as residues: Pro-1 to Ser-8.
831800	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 934 as residues: Asp-1 to Ser-6, Glu-16 to Ser-26, Lys-66 to Pro-76, Leu-93 to Arg-99, Val-153 to Lys-164, Glu-177 to Asp-183, Ser-188 to Leu-193, Arg-210 to Ser-220, Thr-229 to Ser-244, Pro-283 to Phe-297.
831813	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 937 as residues: Pro-20 to Ala-30.
831830	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 938 as residues: Arg-12 to Lys-17, Gln-51 to Phe-60, Asp-97 to Trp-102, Glu-132 to Cys-137, Asp-160 to Leu-168, Glu-210 to Gln-219, Lys-302 to Pro-308, Phe-416 to Asp-421, Leu-444 to Leu-449, Val-457 to Asn-464, Leu-466 to Trp-472, Ile-474 to Trp-480, Ser-527 to Ser-533, Pro-558 to Phe-565, Ile-578 to Trp-584, Asp-614 to Asp-627, Asn-698 to Asp-710, Pro-738 to Ser-744.
831860	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 939 as residues: Pro-19 to Tyr-25.

831896	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 941 as residues: Ser-18 to Phe-30. Leu-34 to Asn-41. Ala-48 to Tyr-56. Leu-103 to Ala-110. Asp-124 to Val-130. Ile-141 to Leu-150. Leu-188 to Ser-196. Glu-229 to Asn-238. Thr-248 to Cys-259.
831928	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 942 as residues: Asn-55 to Asp-60.
831949	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 943 as residues: Arg-1 to Glu-9. Glu-19 to Arg-32. Ala-77 to Thr-90, Thr-95 to Thr-104. Lys-106 to Ser-119. Leu-136 to Arg-141. Tyr-165 to Asn-174.
831950	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 944 as residues: Ser-18 to Glu-26. Phe-93 to Arg-102. Leu-137 to Gln-143. Pro-148 to Gly-157.
831975	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 946 as residues: His-41 to Thr-48.
832047	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 948 as residues: Arg-57 to Glu-62. Pro-73 to Gly-80.
832078	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 949 as residues: Pro-14 to Leu-21. Cys-34 to Gly-39.
832100	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 950 as residues: Tyr-37 to Val-45.
832104	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 951 as residues: Thr-1 to Ser-6. Arg-14 to Cys-20.
832279	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 954 as residues: Ser-28 to Pro-34, Pro-134 to Ser-139. Gln-178 to Gly-183. Thr-193 to Gly-198. His-244 to Gly-257. Asp-263 to Tyr-273. Lys-337 to Arg-347. Pro-366 to Lys-372. Ala-382 to Asp-387.
832317	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 955 as residues: Thr-32 to Gln-39. Asn-58 to Trp-71. Glu-96 to Trp-108. Cys-126 to Gly-133.
832364	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 957 as residues: Glu-2 to Met-9. Asp-17 to Asn-22. Leu-27 to Val-35.
832428	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 960 as residues: Arg-35 to Gly-41.
832485	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 961 as residues: Ser-121 to Cys-127.
832494	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 962 as residues: Ser-10 to Leu-28. Ser-31 to Asp-40. Ser-55 to Thr-62. Thr-94 to Asn-102. Asp-124 to Phe-135. Asn-175 to Lys-193. Glu-238 to Leu-243. Val-250 to Ala-259. Lys-291 to Asn-308. Ser-318 to Gly-327. Lys-335 to Asp-346. Tyr-404 to Ile-410. Gln-420 to Gln-430. Thr-476 to Phe-482. Pro-536 to Val-561. Tyr-563 to Leu-568.
832512	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 963 as residues: Arg-1 to Ala-7, Leu-9 to Ser-24, Glu-32 to Asp-43, Glu-71 to Glu-86. Val-92 to Ile-104. Asp-143 to Ser-154. Lys-190 to Glu-202. Glu-218 to Lys-241.
832515	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 964 as residues: Glu-3 to Gly-12, Arg-20 to Gln-30. Leu-34 to Gln-39, Asp-51 to Arg-58. Gln-69 to Val-77. Gly-105 to Lys-117. Cys-123 to Phe-132.
832526	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 965 as residues: Pro-15 to Asn-25. Glu-48 to Phe-59.
832575	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 966 as residues: Thr-24 to Arg-29, Ala-55 to Tyr-60. Tyr-77 to Asp-89, Leu-108 to Gly-115. Thr-142 to Gly-149.
832576	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 967 as residues: Arg-1 to Leu-11, Pro-21 to Gly-28, Pro-37 to His-47, Lys-79 to Gln-88. Pro-108 to Gly-116. Pro-179 to Thr-188. Arg-207 to Asn-213.
832634	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 969 as residues: Leu-2 to Ser-12. Pro-125 to Asp-133.
832728	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 970 as residues: Gln-16 to Gly-32. Leu-100 to Gly-106. Gly-118 to Lys-132. Pro-156 to Leu-

	162.
833395	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 972 as residues: Ser-3 to Gly-9.
834326	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 973 as residues: Ser-1 to Trp-19. Asn-148 to Leu-153. Tyr-235 to Trp-244.
834944	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 975 as residues: Glu-42 to Gln-51. Pro-115 to Asp-120. Arg-127 to Gly-133. Gln-199 to Gln-211.
835104	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 977 as residues: Thr-1 to Arg-14. Val-18 to Pro-23. Thr-37 to Met-44. Gln-51 to Leu-57.
835332	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 978 as residues: Thr-1 to Glu-13. Arg-135 to Asp-142. Thr-150 to Gln-155. Cys-173 to Cys-183. Cys-203 to Asp-214.
835487	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 979 as residues: Ala-13 to Arg-22, Pro-43 to Glu-57. Ala-73 to Pro-90, Arg-102 to Ser-109. Pro-114 to Gly-122, Arg-127 to Arg-138. Glu-153 to Gly-158. Pro-165 to Pro-171. Gly-185 to Arg-190. Pro-211 to Pro-216. Glu-231 to Asn-261. Ala-280 to Pro-291. Pro-303 to Gly-311. Arg-313 to Gly-326, Ala-358 to Ala-364. Pro-369 to Gly-377. Pro-390 to Gly-407. Tyr-420 to Tyr-441. Glu-461 to Thr-470. Pro-479 to Trp-487. Asp-489 to Cys-494. Gln-515 to Lys-532. Ala-572 to Asn-582. Asp-588 to Leu-594. Cys-625 to Trp-632. Tyr-639 to Arg-646.
836182	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 980 as residues: Ala-7 to Thr-17. Arg-31 to Thr-36.
836522	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 981 as residues: Gly-59 to Cys-65.
836789	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 984 as residues: Gly-18 to Gly-25. Glu-59 to Glu-64.
838577	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 985 as residues: Pro-15 to Trp-20, Pro-46 to Gln-57. Glu-68 to Phe-83.
839008	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 987 as residues: Arg-1 to Arg-13, Gln-125 to Glu-131. Asn-137 to Val-142, Gly-183 to Tyr-188, Asn-245 to Ser-251. Gln-302 to Asn-311.
840063	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 988 as residues: Gly-1 to Gly-31.
840533	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 989 as residues: Thr-16 to Pro-23. Pro-39 to Trp-48. Arg-50 to Lys-55. Gly-73 to Gly-79.
840669	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 990 as residues: Met-27 to Gln-33, Gln-49 to Gly-56, Thr-63 to Leu-70, Thr-115 to Arg-127, Pro-174 to Asn-184.
841140	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 991 as residues: Arg-17 to Phe-24. Pro-113 to Gly-121. Thr-235 to Met-240.
841386	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 992 as residues: Val-58 to Met-66, Pro-134 to Lys-143, Tyr-163 to Ala-170, Val-178 to Lys-187. Pro-207 to Gly-212.
841900	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 996 as residues: Ile-2 to Phe-12.
842054	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 997 as residues: Asp-27 to Trp-32. Pro-89 to Glu-99. Arg-112 to Lys-123.
843061	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 998 as residues: Leu-3 to Gly-18, His-36 to His-57. Lys-136 to Leu-145. Gly-174 to Trp-184, Lys-188 to Tyr-196, Lys-204 to Asp-211, Pro-293 to Ser-305. Glu-321 to Asp-333. Gly-342 to Lys-348. Ala-371 to Asp-377. Asp-439 to Leu-449. Ala-521 to Gly-529. Tyr-583 to Trp-599. Asn-639 to Ser-644. Leu-738 to Leu-745.
843544	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 999 as residues: Tyr-11 to Phe-18. Ser-34 to Lys-43.
844092	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1000 as

	residues: Gln-1 to Lys-6. Glu-30 to Glu-37. Glu-40 to Thr-53.
844270	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1001 as residues: Thr-10 to Gly-20. Pro-44 to Thr-50.
844604	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1002 as residues: Gly-8 to Phe-20. Pro-23 to Arg-43. Asp-62 to Asp-67. Pro-73 to Asn-80. Val-83 to Phe-95. Glu-103 to Ile-109. Tyr-120 to Ala-125. Thr-176 to Thr-183. Pro-200 to Pro-214. Pro-232 to Met-240. Gln-248 to Asp-292. Arg-297 to Ser-310. Pro-320 to Glu-332. Glu-347 to Ser-390. Ala-392 to Pro-404. Pro-425 to Gly-435. Pro-438 to Gly-443. Gly-467 to Pro-480, Pro-486 to Pro-499. Pro-506 to Met-512. Pro-572 to Glu-580, Arg-592 to Gly-597. Ala-601 to Ser-610. Ala-618 to Pro-623.
844685	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1003 as residues: Ser-14 to Ser-19. Pro-25 to Gly-32. Asn-98 to Lys-108.
844855	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1004 as residues: Ala-9 to Ser-15. Pro-21 to Arg-26.
845101	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1005 as residues: Ala-2 to Gly-13. Pro-31 to Pro-42. Gln-89 to Tyr-95. Gln-169 to Leu-189.
845141	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1006 as residues: Gly-13 to Met-26. Arg-34 to Gly-39. Ile-60 to Ser-80. Ala-85 to Thr-98.
845220	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1007 as residues: Pro-14 to Gly-24. Glu-33 to Ala-39. Asp-145 to Pro-168. Ala-238 to Arg-250. Pro-258 to Phe-269. Arg-285 to Pro-290. Ala-340 to Cys-364.
845434	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1008 as residues: Ala-1 to Glu-7, Gln-29 to Phe-34. Gly-67 to Ala-75, Gln-78 to Leu-83. Asn-96 to Ile-109. Thr-144 to Trp-151.
845510	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1009 as residues: Arg-79 to Leu-86, Met-114 to Asp-122. Leu-129 to Leu-134, Gln-145 to Arg-152.
845600	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1010 as residues: Ala-22 to Phe-28.
845882	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1011 as residues: Ala-1 to Gly-7, Arg-29 to Lys-35. Lys-72 to Ala-79, Leu-94 to Val-101, Gly-137 to Asn-142, Arg-145 to Leu-150. Gly-180 to Lys-187, Glu-194 to Gly-208, Arg-257 to Ser-267, Ser-278 to Asp-290, Gly-312 to Ser-319, Leu-338 to Lys-351. Tyr-358 to Ser-363.
846007	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1012 as residues: Tyr-16 to Ala-24, Arg-59 to Ser-66. Thr-78 to Glu-83, Glu-90 to Ser-103. Gln-108 to Thr-113. Ser-115 to Cys-124.
HCRNG17R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1016 as residues: Pro-16 to Asp-21.
HWMFG64R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1017 as residues: Ser-70 to Asp-76. Lys-87 to Leu-95.
HAGCZ94R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1018 as residues: Val-3 to Lys-9.
HBJEJ74R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1019 as residues: Pro-1 to Asp-8.
HUTHM43R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1021 as residues: Pro-7 to Arg-15.
HLTGU75R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1022 as residues: Ser-1 to Gly-11.
HWLKF77R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1023 as residues: Leu-10 to Asn-28.
HWLGX29R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1027 as residues: Val-3 to Ile-10. Pro-34 to Gln-40.
HWMFZ29R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1028 as residues: Leu-7 to Leu-13.
H6EEP19R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1030 as

	residues: Ala-1 to Trp-8, Lys-10 to Asp-27.
HJMAM83R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1031 as residues: Ser-1 to Val-11, Glu-19 to Ala-29, Asp-52 to Ala-68, Gly-78 to Lys-94.
HAGHF58R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1032 as residues: Lys-1 to Val-7.
HDPHG48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1033 as residues: Gly-24 to Lys-34.
HCDMC32R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1038 as residues: Pro-2 to Arg-17, Lys-36 to Pro-47, Phe-61 to Trp-68, Gln-72 to Ala-86.
HTEQO80R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1040 as residues: Gly-1 to Val-15, Pro-17 to Pro-23, Leu-32 to Met-41, Lys-102 to His-109.
H2LAR08R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1043 as residues: Asn-58 to Gly-64.
HWMFN58R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1046 as residues: Glu-6 to Asn-14, Arg-22 to Asp-31, Gly-49 to Thr-56.
HUFBP63R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1049 as residues: Pro-1 to Gln-8, Thr-57 to Gly-64, Arg-69 to Arg-74, Gly-80 to Asp-91, Asp-105 to Gln-110, Arg-130 to Tyr-148.
HUFBN90R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1050 as residues: Glu-34 to Ala-40, Arg-111 to Ala-116.
HFKHD61R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1054 as residues: Arg-11 to Gly-38, Arg-44 to Glu-50, Gln-53 to Lys-67.
HTXNL13R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1057 as residues: Ser-48 to Arg-57, Glu-89 to Pro-95, Ser-102 to Asn-107.
H2LAK62R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1059 as residues: Pro-20 to Ser-25.
HATAR77R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1061 as residues: Gly-2 to Arg-16.
HWMEH18R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1066 as residues: Gln-61 to Ser-67.
HCNDP66R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1068 as residues: Leu-8 to Arg-15, Gln-46 to Pro-54.
HCRMK82R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1069 as residues: Ser-32 to Arg-38, Ala-72 to Lys-79, Arg-103 to Phe-111.
HSSGC52R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1075 as residues: Gly-1 to Pro-6, Arg-25 to Ile-30.
HCYBN49R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1076 as residues: Gly-16 to Gly-21, Ile-99 to Gln-109.
HWMGB90R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1077 as residues: Gly-1 to Ala-7, Asp-17 to Arg-27, Glu-32 to Leu-40.
HTEAW21R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1078 as residues: Glu-1 to Gly-6, Gln-19 to Leu-37.
H2LAQ68R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1082 as residues: Val-2 to Trp-10, Leu-25 to Lys-33.
HBAAD60R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1087 as residues: Pro-1 to Lys-32.
HCROA35R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1088 as residues: Gly-6 to Lys-12.
HCROM64R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1089 as residues: Asn-1 to Arg-7.
HKBAG82R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1091 as residues: Pro-9 to Gly-28.
HUTSB76R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1092 as residues: Lys-1 to Ser-17.
HWLJS67R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1093 as residues: Gln-3 to Lys-18, Gln-44 to Glu-49.

HTGAZ53R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1098 as residues: Ser-1 to Ala-16, Gln-36 to Thr-48.
HWLLL51R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1100 as residues: Gln-6 to Gly-18.
HWLJZ72R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1103 as residues: Ile-1 to Ser-19.
HWMFG06R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1104 as residues: Arg-1 to Lys-14, Gln-40 to Glu-45, Arg-65 to Arg-80.
HPRTO65R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1105 as residues: Thr-12 to Thr-17, Cys-35 to Ser-40.
HUFDC01R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1106 as residues: Pro-11 to Glu-26.
HWLHY44R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1107 as residues: Pro-14 to Gln-24, Cys-34 to Leu-39, Thr-72 to Val-77, Glu-94 to Thr-99, Asp-101 to Met-107, Lys-109 to Pro-116.
HWLGR92R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1108 as residues: Pro-17 to Gly-22.
HCNCQ71R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1109 as residues: Glu-22 to Leu-30.
HWLEN11R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1111 as residues: Pro-6 to Lys-21, Ala-26 to Val-34, Lys-37 to Ser-46.
HWLEH56R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1116 as residues: Thr-23 to Ala-28, Asn-88 to Trp-98, Cys-114 to Asp-131.
H2LAD26R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1117 as residues: Pro-20 to Gly-31.
H2LAK66R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1125 as residues: Pro-33 to Leu-39, Glu-54 to Val-59, Gly-69 to Ser-76.
HSDKC65R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1126 as residues: Asn-32 to Pro-39, Pro-41 to Pro-49.
H2LAK52R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1127 as residues: Pro-20 to Ala-28.
HKAEG12R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1128 as residues: Asp-47 to Lys-52.
HKADP43R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1129 as residues: Pro-7 to Pro-15, Arg-35 to Val-44.
HUSJE17R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1131 as residues: Pro-26 to Gln-32.
HHBEF06R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1133 as residues: Pro-1 to Gly-6.
HISCW28R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1134 as residues: Pro-26 to Gln-32.
HPIAK29R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1137 as residues: Thr-1 to Tyr-7.
HUFAR71R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1138 as residues: Pro-26 to Gln-32.
HOECI21R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1141 as residues: Asn-11 to Pro-20, Pro-22 to Thr-30, Glu-49 to Glu-70, Ser-84 to Thr-96, Thr-108 to Thr-113.
HMCAR63R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1143 as residues: Ala-1 to Gly-9, Lys-41 to Glu-47, Asn-65 to Gly-70, Glu-85 to Asp-93, Glu-103 to Tyr-109.
HAICY55R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1152 as residues: Glu-2 to His-9.
HWLIA38R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1153 as residues: Arg-60 to Gly-74, Ser-80 to Ile-88, Leu-92 to Ser-98.
HBXCL69R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1154 as

	residues: Ser-2 to Cys-8, Pro-10 to Leu-17.
H2LAP90R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1155 as residues: Thr-3 to Gln-9, Asn-11 to Pro-19, Gln-35 to Glu-42.
HTELE03R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1157 as residues: Asp-1 to Gln-9, Asn-11 to Arg-16, Cys-28 to Ser-44, Gln-50 to Gln-56.
HJMBN86R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1158 as residues: Ser-31 to Glu-47.
HSKJC32R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1159 as residues: Gln-151 to Glu-158, Glu-168 to Pro-173, Ser-188 to Ile-195.
HAOAG76R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1161 as residues: Gly-1 to Ala-14.
HCIAD45R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1162 as residues: Pro-1 to Lys-23, Pro-43 to Leu-49.
H2MAC82R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1163 as residues: Lys-54 to Lys-59.
H2LAJ41R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1164 as residues: Met-20 to Val-36, Ser-82 to Lys-93, Pro-101 to Arg-106.
HBJFH33R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1166 as residues: Gly-10 to Tyr-26, Asn-29 to Leu-37, Thr-52 to His-59.
HISDV92R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1167 as residues: Pro-3 to Ser-8, Asn-48 to Tyr-54.
HE9QB35R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1169 as residues: Gly-1 to Asp-6, Pro-20 to Gln-33, Tyr-46 to Arg-52, Asn-72 to Lys-85, Gln-91 to Ala-110.
HDABQ50R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1170 as residues: Ser-9 to Lys-17, Lys-41 to Arg-46.
HTPAC28R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1176 as residues: Lys-10 to Thr-15, Thr-17 to Leu-23.
HMCGN07R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1177 as residues: Asn-88 to Ser-98, Pro-123 to Val-129.
HBMVM66R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1180 as residues: Ser-2 to Gly-7, Arg-10 to Phe-24, Ala-36 to Arg-41.
HEPNA09R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1186 as residues: Ser-1 to Pro-6.
HCNDR62R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1190 as residues: Pro-14 to Ser-21.
HNJBF13R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1191 as residues: Asp-18 to Asp-28.
HLYCD69R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1192 as residues: Gly-90 to Thr-109.
HWCAA53R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1194 as residues: Ser-22 to Gly-28, Glu-37 to Ile-45, Val-67 to Arg-85, Asn-91 to Trp-99.
HFVGP11R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1198 as residues: Ala-4 to Asn-13.
HWLQH07R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1199 as residues: Lys-1 to Lys-25.
HWLKH07R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1201 as residues: Pro-49 to Asp-58.
HAPQC14R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1202 as residues: Lys-1 to Met-8.
HSODB48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1203 as residues: Ser-24 to Gly-31, Ala-37 to Ser-44, Pro-57 to Ser-64, Pro-97 to Gly-104.
HBEAC75R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1204 as residues: Pro-1 to Arg-9.
HBGMJ24R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1205 as residues: Tyr-11 to Val-17, Thr-30 to Phe-48, Gln-150 to Thr-155.

HBJEN94R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1206 as residues: Gln-1 to Asn-6.
HLQGB87R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1213 as residues: Lys-2 to Ser-7.
HAOAC69R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1215 as residues: Ser-2 to Arg-10.
HWLEQ08R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1216 as residues: Glu-21 to His-31.
HKAAV70R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1217 as residues: Gly-6 to Thr-93. Glu-95 to Glu-104. Asp-117 to Asp-125.
HNFJE41R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1221 as residues: Arg-15 to His-21, Pro-48 to Ala-58. Asn-61 to Leu-66. Val-92 to Thr-110. Pro-114 to Thr-120.
HCRMW41R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1224 as residues: Phe-14 to Asn-19.
HOVAX78R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1225 as residues: Gly-1 to Thr-8.
HWAEH57R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1226 as residues: Ser-54 to Tyr-60. Gln-65 to Pro-72. Thr-81 to Gly-92.
HAHEK76R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1230 as residues: Cys-20 to Cys-28.
HOSCG81R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1232 as residues: Thr-8 to Asn-13.
HTFMD43R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1233 as residues: Lys-44 to Ile-52. Arg-57 to Lys-77.
H2LAR73R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1235 as residues: Pro-20 to Arg-27. Asn-47 to Lys-53. Asp-116 to Asn-123. Glu-145 to Gly-154.
HWHPK71R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1238 as residues: Asp-15 to His-24. Pro-27 to Leu-39.
HWBBJ39R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1239 as residues: His-1 to Lys-6.
HSODD94R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1241 as residues: Gly-7 to Glu-15. Gly-29 to Lys-41, Pro-43 to Ser-52. Pro-68 to His-73.
HMIAG25R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1242 as residues: Arg-19 to Ser-41. Pro-43 to Glu-54. Ser-59 to Gly-74.
HCNDW17R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1244 as residues: Lys-7 to Lys-15. Thr-54 to Asn-59.
HWLEY08R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1245 as residues: Glu-9 to Arg-14, Thr-19 to Arg-27, Asp-48 to Ile-57, Gln-63 to Leu-75, Cys-89 to Thr-104. Gly-106 to Pro-113.
HULFN68R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1246 as residues: Ser-1 to Cys-16. Lys-18 to Gly-23. Pro-31 to Tyr-37. Gly-53 to Pro-58.
HTEJJ32R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1249 as residues: Ser-17 to Cys-23. Gln-42 to Leu-51. Ser-68 to Asp-73.
H2CBS58R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1251 as residues: Ser-82 to Phe-88. Lys-110 to Gly-118.
H2LAB77R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1252 as residues: Met-13 to Asp-18. Glu-23 to Ser-43. Glu-45 to Gly-54.
HWAFP88R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1254 as residues: Arg-8 to Lys-13. Gly-35 to Lys-42. Ala-48 to Lys-54.
HWMEB67R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1256 as residues: Arg-9 to Arg-16.
HKMAA52R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1261 as residues: Gly-2 to Lys-10. Asp-36 to Asn-42.
H2LAB37R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1262 as residues: Glu-52 to Thr-59.

H2LAP46R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1263 as residues: Pro-40 to Asn-46. Tyr-71 to Arg-79.
H6BSE61R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1264 as residues: Ile-36 to Asp-41. Ala-54 to Pro-63.
HACBS75R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1269 as residues: Arg-20 to Ser-27. Arg-45 to Trp-59.
HACCA48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1270 as residues: Lys-12 to Lys-26.
HACCS19R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1271 as residues: Gly-1 to Gly-10.
HAGGL96R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1273 as residues: Ser-74 to Phe-88.
HAGGT37R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1274 as residues: Phe-17 to Pro-22.
HAHDR66R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1275 as residues: Gly-11 to Ala-18.
HAJCL80R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1277 as residues: Asn-22 to Phe-32.
HAQMH45R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1283 as residues: Pro-2 to Tyr-13. Leu-21 to Gly-47. Val-49 to Gly-55. Pro-63 to Glu-78.
HBGCA44R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1290 as residues: Thr-20 to Trp-25. Lys-32 to Leu-40.
HBGFX27R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1291 as residues: Ser-1 to Pro-6.
HBGMU38R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1292 as residues: Gln-1 to Phe-8. Thr-34 to Trp-53. Arg-56 to Gly-63. Arg-86 to Cys-102.
HBJED55R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1295 as residues: Arg-6 to Pro-14.
HBMTJ51R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1300 as residues: Cys-8 to Asp-13.
HBWBD78R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1302 as residues: Pro-51 to Ala-58.
HCDDQ63R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1307 as residues: Gln-1 to Lys-10.
HCFCD01R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1310 as residues: Ser-1 to Thr-6.
HCFCR43R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1311 as residues: Arg-10 to Thr-20.
HCHAO92R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1313 as residues: Asn-19 to Arg-25.
HCHOH49R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1314 as residues: Asn-19 to Asp-30.
HCHPG05R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1315 as residues: Pro-6 to Ser-11.
HCIAD24R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1316 as residues: Lys-1 to Gly-7.
HCNCY51R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1319 as residues: Lys-10 to Arg-16.
HCNCY63R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1320 as residues: Gly-1 to Lys-9.
HCNDO71R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1321 as residues: Lys-33 to Ile-42. Arg-51 to Phe-64.
HCQBN22R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1324 as residues: Lys-1 to Asn-11.
HCQCL27R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1325 as residues: Gly-7 to His-27.

HCQCL48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1326 as residues: Ala-1 to Thr-13.
HCQDJ42R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1330 as residues: Glu-8 to Asn-13, Arg-16 to Glu-24.
HCRMD77R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1331 as residues: Asn-4 to Asn-10.
HCROJ68R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1339 as residues: Ile-2 to His-8.
HCROM30R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1342 as residues: Glu-1 to Glu-7. Pro-26 to Leu-32. Gly-37 to Gln-44. Thr-84 to Thr-92.
HCROQ34R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1343 as residues: Asn-1 to Asp-11.
HCROZ66R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1345 as residues: Arg-7 to Lys-13.
HCRPC61R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1346 as residues: Ala-3 to Gly-8.
HCRPG28R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1347 as residues: Pro-26 to Ser-32.
HCRPN52R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1349 as residues: Ser-24 to Lys-30. Lys-54 to Ser-61.
HDCAA21R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1354 as residues: Phe-6 to Val-12. Ile-15 to Phe-20.
HDDAA85R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1355 as residues: Lys-18 to Lys-24.
HDPGO03R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1356 as residues: Ala-4 to Gln-17.
HDPLB08R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1357 as residues: Pro-2 to Tyr-13. Leu-21 to Ala-36.
HDQEX80R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1359 as residues: Arg-1 to Arg-6, Phe-27 to Arg-32, Pro-37 to Lys-42, Arg-47 to Trp-53, Arg-55 to Ser-61.
HDRMI91R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1360 as residues: Thr-1 to Lys-8.
HE6DJ45R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1364 as residues: Pro-1 to Asn-8.
HE9FH12R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1366 as residues: Asn-12 to Ser-20.
HEAAL59R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1370 as residues: Gln-20 to Asn-25.
HEGAR32R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1371 as residues: Lys-9 to Ser-19.
HEGAR85R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1372 as residues: Ser-16 to His-46. Arg-49 to Thr-58.
HELFE05R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1373 as residues: Tyr-8 to Leu-16.
HEMFI88R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1374 as residues: Pro-6 to Ala-13.
HEMFR18R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1375 as residues: Ala-1 to Ala-10, Pro-12 to Gly-17, Ala-22 to Cys-27, Glu-30 to Arg-35, Pro-43 to Ser-50.
HEONL43R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1376 as residues: Arg-1 to Val-10.
HFADM62R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1380 as residues: Lys-6 to Lys-14.
HFATE31R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1381 as residues: Asp-1 to Arg-9. Arg-20 to Arg-26. Glu-33 to Gly-40.

HFCEL77R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1383 as residues: Glu-33 to Ser-48, Ile-54 to Ile-63, Leu-79 to Asp-84.
HFTBI57R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1392 as residues: Pro-18 to Ser-23.
HFXGX46R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1394 as residues: Pro-11 to Gln-28.
HHBEW72R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1400 as residues: Pro-20 to Thr-27.
HHERT59R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1401 as residues: Arg-1 to Trp-9.
HJMAH76R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1405 as residues: Cys-10 to Ala-15.
HJMAN56R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1406 as residues: Ala-45 to Asp-60.
HJMAO54R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1407 as residues: Pro-28 to Gln-39, Pro-65 to Cys-80.
HKLSD93R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1409 as residues: Gly-11 to Gly-17.
HLMFH16R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1410 as residues: Gly-1 to Asp-8.
HLQCQ73R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1412 as residues: Glu-1 to Gly-6, Arg-8 to Phe-13.
HLQEF47R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1413 as residues: Leu-8 to Leu-13.
HLQFM50R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1414 as residues: Gly-29 to Asp-34.
HLQGA76R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1416 as residues: Ser-16 to Ser-33.
HLTEV09R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1418 as residues: Arg-9 to Asn-17.
HMACF85R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1421 as residues: Glu-29 to Lys-34, Leu-113 to Gln-120.
HMAIA15R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1422 as residues: Lys-15 to Gln-21, Ile-51 to Gly-57, Lys-72 to Gly-83.
HMCIS54R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1424 as residues: Lys-3 to His-24.
HNHMR05R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1427 as residues: Pro-9 to Gly-20, Thr-26 to Arg-42, Ala-48 to Ser-54.
HNJBB78R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1428 as residues: Thr-6 to Lys-13, Leu-48 to Asn-54.
HOCND06R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1433 as residues: Pro-2 to Tyr-13, Leu-21 to Ala-35.
HOCND49R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1434 as residues: Asn-2 to Gly-12, Ile-14 to Ala-30.
HODFA26R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1436 as residues: Glu-1 to His-6, Gly-19 to Asp-29, Leu-44 to Leu-49.
HODHL89R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1437 as residues: Ser-16 to His-46, Arg-49 to Thr-58.
HOEJM67R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1438 as residues: Ser-19 to Lys-25, Asp-29 to Glu-55, Ser-102 to Thr-107.
HOGBN48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1439 as residues: Lys-14 to Arg-19, Asp-25 to Phe-32.
HOUHN53R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1442 as residues: Glu-1 to His-6, Gly-19 to Trp-31.
HPBEE63R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1444 as residues: Pro-14 to Gly-20, His-28 to Arg-35.

HPJBE91R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1446 as residues: Ser-15 to Asn-20. Ala-22 to Ile-49. Lys-52 to Val-57. Tyr-71 to Cys-83. Thr-90 to Tyr-95.
HSDZG83R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1454 as residues: Val-17 to Lys-22.
HSICQ60R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1455 as residues: Val-12 to Gly-17.
HSIFA64R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1456 as residues: His-17 to Ile-22. Leu-33 to Pro-40.
HSKYE52R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1458 as residues: Pro-2 to Ser-7.
HSODA95R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1460 as residues: Ser-14 to His-44. Arg-47 to Thr-56.
HSSGK43R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1462 as residues: Ser-24 to Leu-35. Pro-38 to Ser-45.
HTXFA64R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1470 as residues: Thr-1 to Glu-8.
HUSJF91R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1471 as residues: Gly-1 to Gly-6.
HUSJN48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1472 as residues: Ser-16 to Tyr-24.
HUSZN23R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1474 as residues: Ser-16 to Lys-24.
HUTSD20R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1475 as residues: Arg-10 to Asn-20.
HWAFI63R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1477 as residues: Pro-15 to Gly-24. Pro-26 to Arg-45.
HWAGZ89R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1478 as residues: Ser-47 to Lys-52.
HWHHM83R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1480 as residues: Leu-1 to Gly-6.
HWLBS90R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1484 as residues: Lys-37 to Asn-44.
HWLEH13R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1486 as residues: Gln-22 to Glu-29.
HWLEJ67R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1487 as residues: Asn-5 to Trp-13.
HWLEM49R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1488 as residues: Glu-1 to His-6. Gly-19 to Trp-31.
HWLGM21R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1492 as residues: Glu-1 to His-6. Gly-19 to Trp-31.
HWLGS46R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1494 as residues: Glu-17 to Asn-23. Glu-38 to Gly-49.
HWLGU40R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1495 as residues: His-10 to Pro-15.
HWLGX65R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1496 as residues: Glu-1 to Asn-7.
HWLHD09R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1497 as residues: Pro-6 to Ala-37. Arg-40 to Ser-49.
HWLHW89R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1500 as residues: Asn-1 to Lys-16. Glu-32 to Ser-41. Leu-57 to Gly-71.
HWLJL19R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1506 as residues: Arg-46 to Phe-58.
HWLKG82R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1508 as residues: Pro-5 to Gly-25. Ser-29 to Leu-36. Arg-49 to Phe-55.
HWLKM86R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1512 as

	residues: Arg-10 to Lys-23.
HWLQS83R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1515 as residues: Ala-1 to Arg-6.
HWLRP86R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1518 as residues: Tyr-3 to Gly-10.
HWLRQ49R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1519 as residues: Pro-19 to Ser-26. Gln-44 to Lys-52.
HWLUF60R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1520 as residues: Gln-7 to Lys-31.
HWLUR41R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1522 as residues: Ser-24 to Trp-30.
HWLVD60R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1523 as residues: Cys-15 to Lys-51.
HWMAN61R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1525 as residues: Ser-21 to Asp-26.
HWMEH26R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1528 as residues: Ser-16 to His-46. Arg-49 to Thr-58.
HWMEL50R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1529 as residues: Pro-24 to Thr-40. Phe-63 to Arg-69.
HWMFB31R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1530 as residues: Asn-2 to Lys-10. Cys-16 to Pro-28. Ser-36 to Glu-41.
HWMFO93R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1532 as residues: Ser-8 to Gln-14.
HMAFE48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1537 as residues: Glu-9 to Gly-17.
HRODJ88R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1538 as residues: Gly-6 to Tyr-14.
HWLAR31R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1539 as residues: Glu-9 to Gly-17.
H2LAU24R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1541 as residues: Glu-11 to Gly-19.
HATDR94R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1542 as residues: Glu-14 to Lys-19. Asn-21 to Gly-27.
HWLLI85R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1543 as residues: Val-19 to Asn-32.
HSYCH41R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1545 as residues: Thr-71 to Ile-79.

The present invention encompasses polypeptides comprising, or alternatively consisting of, an epitope of the polypeptide sequence shown in SEQ ID NO:Y, or an epitope of the polypeptide sequence encoded by the cDNA in the related cDNA clone contained in a deposited library or encoded by a polynucleotide that hybridizes to the complement of an epitope encoding sequence of SEQ ID NO:X, or an epitope encoding sequence contained in the deposited cDNA clone under stringent hybridization conditions, or alternatively, under lower stringency hybridization conditions, as defined supra. The present invention further encompasses polynucleotide sequences encoding an epitope of a polypeptide sequence of the invention (such as, for example, the sequence disclosed in SEQ ID NO:X), polynucleotide sequences of the complementary strand of a polynucleotide sequence encoding an epitope of the invention, and polynucleotide sequences which hybridize to this complementary strand under stringent hybridization conditions or alternatively, under lower stringency hybridization conditions, as defined supra.

The term "epitopes," as used herein, refers to portions of a polypeptide having antigenic or immunogenic activity in an animal, preferably a mammal, and most preferably in a human. In a preferred embodiment, the present invention encompasses a polypeptide comprising an epitope, as well as the polynucleotide encoding this polypeptide. An "immunogenic epitope," as used herein, is defined as a portion of a protein that elicits an antibody response in an animal, as determined by any method known in the art, for example, by the methods for generating antibodies described infra. (See, for example, Geysen et al., Proc. Natl. Acad. Sci. USA 81:3998- 4002 (1983)). The term "antigenic epitope," as used herein, is defined as a portion of a protein to which an antibody can immunospecifically bind its antigen as determined by any method well known in the art, for example, by the immunoassays described herein. Immunospecific binding excludes non-specific binding but does not necessarily exclude cross- reactivity with other antigens. Antigenic epitopes need not necessarily be immunogenic.

Fragments which function as epitopes may be produced by any conventional means. (See, e.g., Houghten, R. A., Proc. Natl. Acad. Sci. USA 82:5131-5135 (1985) further described in U.S. Patent No. 4,631,211.)

In the present invention, antigenic epitopes preferably contain a sequence of at least 4, at least 5, at least 6, at least 7, more preferably at least 8, at least 9, at least 10, at least 11, at least 12, at least 13, at least 14, at least 15, at least 20, at least 25, at least 30, at least 40, at

least 50, and, most preferably, between about 15 to about 30 amino acids. Preferred polypeptides comprising immunogenic or antigenic epitopes are at least 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 amino acid residues in length. Additional non-exclusive preferred antigenic epitopes include the antigenic epitopes disclosed herein, as well as portions thereof. Antigenic epitopes are useful, for example, to raise antibodies, including monoclonal antibodies, that specifically bind the epitope. Preferred antigenic epitopes include the antigenic epitopes disclosed herein, as well as any combination of two, three, four, five or more of these antigenic epitopes. Antigenic epitopes can be used as the target molecules in immunoassays. (See, for instance, Wilson et al., Cell 37:767-778 (1984); Sutcliffe et al., Science 219:660-666 (1983)).

Similarly, immunogenic epitopes can be used, for example, to induce antibodies according to methods well known in the art. (See, for instance, Sutcliffe et al., supra; Wilson et al., supra; Chow et al., Proc. Natl. Acad. Sci. USA 82:910-914; and Bittle et al., J. Gen. Virol. 66:2347-2354 (1985). Preferred immunogenic epitopes include the immunogenic epitopes disclosed herein, as well as any combination of two, three, four, five or more of these immunogenic epitopes. The polypeptides comprising one or more immunogenic epitopes may be presented for eliciting an antibody response together with a carrier protein, such as an albumin, to an animal system (such as rabbit or mouse), or, if the polypeptide is of sufficient length (at least about 25 amino acids), the polypeptide may be presented without a carrier. However, immunogenic epitopes comprising as few as 8 to 10 amino acids have been shown to be sufficient to raise antibodies capable of binding to, at the very least, linear epitopes in a denatured polypeptide (e.g., in Western blotting).

Epitope-bearing polypeptides of the present invention may be used to induce antibodies according to methods well known in the art including, but not limited to, in vivo immunization, in vitro immunization, and phage display methods. See, e.g., Sutcliffe et al., supra; Wilson et al., supra, and Bittle et al., J. Gen. Virol., 66:2347-2354 (1985). If in vivo immunization is used, animals may be immunized with free peptide; however, anti-peptide antibody titer may be boosted by coupling the peptide to a macromolecular carrier, such as keyhole limpet hemacyanin (KLH) or tetanus toxoid. For instance, peptides containing cysteine residues may be coupled to a carrier using a linker such as maleimidobenzoyl- N-hydroxysuccinimide ester (MBS), while other peptides may be coupled to carriers using a more general linking agent such as glutaraldehyde. Animals such as rabbits, rats and mice

are immunized with either free or carrier- coupled peptides, for instance, by intraperitoneal and/or intradermal injection of emulsions containing about 100 μg of peptide or carrier protein and Freund's adjuvant or any other adjuvant known for stimulating an immune response. Several booster injections may be needed, for instance, at intervals of about two weeks, to provide a useful titer of anti-peptide antibody which can be detected, for example, by ELISA assay using free peptide adsorbed to a solid surface. The titer of anti-peptide antibodies in serum from an immunized animal may be increased by selection of anti-peptide antibodies, for instance, by adsorption to the peptide on a solid support and elution of the selected antibodies according to methods well known in the art.

As one of skill in the art will appreciate, and as discussed above, the polypeptides of the present invention , and immunogenic and/or antigenic epitope fragments thereof can be fused to other polypeptide sequences. For example, the polypeptides of the present invention may be fused with the constant domain of immunoglobulins (IgA, IgE, IgG, IgM), or portions thereof (CH1, CH2, CH3, or any combination thereof and portions thereof) resulting in chimeric polypeptides. Such fusion proteins may facilitate purification and may increase half-life in vivo. This has been shown for chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. See, e.g., EP 394,827; Traunecker et al., Nature, 331:84-86 (1988). Enhanced delivery of an antigen across the epithelial barrier to the immune system has been demonstrated for antigens (e.g., insulin) conjugated to an FcRn binding partner such as IgG or Fc fragments (see, e.g., PCT Publications WO 96/22024 and WO 99/04813). IgG Fusion proteins that have a disulfide-linked dimeric structure due to the IgG portion desulfide bonds have also been found to be more efficient in binding and neutralizing other molecules than monomeric polypeptides or fragments thereof alone. See, e.g., Fountoulakis et al., J. Biochem., 270:3958-3964 (1995).

Similarly, EP-A-O 464 533 (Canadian counterpart 2045869) discloses fusion proteins comprising various portions of constant region of immunoglobulin molecules together with another human protein or part thereof. In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties. (EP-A 0232 262.) Alternatively, deleting the Fc part after the fusion protein has been expressed, detected, and purified, may be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for

immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. (See, D. Bennett et al., J. Molecular Recognition 8:52-58 (1995); K. Johanson et al., J. Biol. Chem. 270:9459-9471 (1995).)

Moreover, the polypeptides of the present invention can be fused to marker sequences, such as a peptide which facilitates purification of the fused polypeptide. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Another peptide tag useful for purification, the "HA" tag, corresponds to an epitope derived from the influenza hemagglutinin protein. (Wilson et al., Cell 37:767 (1984).)

Thus, any of these above fusions can be engineered using the polynucleotides or the polypeptides of the present invention.

Nucleic acids encoding the above epitopes can also be recombined with a gene of interest as an epitope tag (e.g., the hemagglutinin ("HA") tag or flag tag) to aid in detection and purification of the expressed polypeptide. For example, a system described by Janknecht et al. allows for the ready purification of non-denatured fusion proteins expressed in human cell lines (Janknecht et al., Proc. Natl. Acad. Sci. USA 88:8972- 897 (1991)). In this system, the gene of interest is subcloned into a vaccinia recombination plasmid such that the open reading frame of the gene is translationally fused to an amino-terminal tag consisting of six histidine residues. The tag serves as a matrix binding domain for the fusion protein. Extracts from cells infected with the recombinant vaccinia virus are loaded onto Ni2+ nitriloacetic acid-agarose column and histidine-tagged proteins can be selectively eluted with imidazole-containing buffers.

Additional fusion proteins of the invention may be generated through the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling"). DNA shuffling may be employed to modulate the activities of polypeptides of the invention, such methods can be used to generate polypeptides with altered activity, as well as agonists and antagonists of the polypeptides. See, generally, U.S. Patent Nos. 5,605,793; 5,811,238; 5,830,721; 5,834,252; and 5,837,458, and Patten et al.,

Curr. Opinion Biotechnol. 8:724-33 (1997); Harayama, Trends Biotechnol. 16(2):76-82 (1998); Hansson, et al., J. Mol. Biol. 287:265-76 (1999); and Lorenzo and Blasco, Biotechniques 24(2):308- 13 (1998) (each of these patents and publications are hereby incorporated by reference in its entirety). In one embodiment, alteration of polynucleotides corresponding to SEQ ID NO:X and the polypeptides encoded by these polynucleotides may be achieved by DNA shuffling. DNA shuffling involves the assembly of two or more DNA segments by homologous or site-specific recombination to generate variation in the polynucleotide sequence. In another embodiment, polynucleotides of the invention, or the encoded polypeptides, may be altered by being subjected to random mutagenesis by error-prone PCR, random nucleotide insertion or other methods prior to recombination. In another embodiment, one or more components, motifs, sections, parts, domains, fragments, etc., of a polynucleotide encoding a polypeptide of the invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc. of one or more heterologous molecules.

As discussed herein, any polypeptide of the present invention can be used to generate fusion proteins. For example, the polypeptide of the present invention, when fused to a second protein, can be used as an antigenic tag. Antibodies raised against the polypeptide of the present invention can be used to indirectly detect the second protein by binding to the polypeptide. Moreover, because secreted proteins target cellular locations based on trafficking signals, polypeptides of the present invention which are shown to be secreted can be used as targeting molecules once fused to other proteins.

Examples of domains that can be fused to polypeptides of the present invention include not only heterologous signal sequences, but also other heterologous functional regions. The fusion does not necessarily need to be direct, but may occur through linker sequences.

In certain preferred embodiments, proteins of the invention comprise fusion proteins wherein the polypeptides are N and/or C- terminal deletion mutants. In preferred embodiments, the application is directed to nucleic acid molecules at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to the nucleic acid sequences encoding polypeptides having the amino acid sequence of the specific N- and C-terminal deletions mutants. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Moreover, fusion proteins may also be engineered to improve characteristics of the polypeptide of the present invention. For instance, a region of additional amino acids, particularly charged amino acids, may be added to the N-terminus of the polypeptide to improve stability and persistence during purification from the host cell or subsequent handling and storage. Also, peptide moieties may be added to the polypeptide to facilitate purification. Such regions may be removed prior to final preparation of the polypeptide. The addition of peptide moieties to facilitate handling of polypeptides are familiar and routine techniques in the art.

Vectors, Host Cells, and Protein Production

The present invention also relates to vectors containing the polynucleotide of the present invention, host cells, and the production of polypeptides by recombinant techniques. The vector may be, for example, a phage, plasmid, viral, or retroviral vector. Retroviral vectors may be replication competent or replication defective. In the latter case, viral propagation generally will occur only in complementing host cells.

The polynucleotides of the invention may be joined to a vector containing a selectable marker for propagation in a host. Generally, a plasmid vector is introduced in a precipitate, such as a calcium phosphate precipitate, or in a complex with a charged lipid. If the vector is a virus, it may be packaged in vitro using an appropriate packaging cell line and then transduced into host cells.

The polynucleotide insert should be operatively linked to an appropriate promoter, such as the phage lambda PL promoter, the E. coli lac, trp, phoA and tac promoters, the SV40 early and late promoters and promoters of retroviral LTRs, to name a few. Other suitable promoters will be known to the skilled artisan. The expression constructs will further contain sites for transcription initiation, termination, and, in the transcribed region, a ribosome binding site for translation. The coding portion of the transcripts expressed by the constructs will preferably include a translation initiating codon at the beginning and a termination codon (UAA, UGA or UAG) appropriately positioned at the end of the polypeptide to be translated.

As indicated, the expression vectors will preferably include at least one selectable marker. Such markers include dihydrofolate reductase, G418 or neomycin resistance for eukaryotic cell culture and tetracycline, kanamycin or ampicillin resistance genes for culturing in E. coli and other bacteria. Representative examples of appropriate hosts include,

but are not limited to, bacterial cells, such as E. coli, Streptomyces and Salmonella typhimurium cells; fungal cells, such as yeast cells (e.g., Saccharomyces cerevisiae or Pichia pastoris (ATCC Accession No. 201178)); insect cells such as Drosophila S2 and Spodoptera Sf9 cells; animal cells such as CHO, COS, 293, and Bowes melanoma cells; and plant cells. Appropriate culture mediums and conditions for the above-described host cells are known in the art.

Among vectors preferred for use in bacteria include pQE70, pQE60 and pQE-9, available from QIAGEN, Inc.; pBluescript vectors, Phagescript vectors, pNH8A, pNH16a, pNH18A, pNH46A, available from Stratagene Cloning Systems, Inc.; and ptrc99a, pKK223-3, pKK233-3, pDR540, pRIT5 available from Pharmacia Biotech, Inc. Among preferred eukaryotic vectors are pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; and pSVK3, pBPV, pMSG and pSVL available from Pharmacia. Preferred expression vectors for use in yeast systems include, but are not limited to pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalph, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, pPIC9K, and PAO815 (all available from Invitrogen, Carlbad, CA). Other suitable vectors will be readily apparent to the skilled artisan.

Introduction of the construct into the host cell can be effected by calcium phosphate transfection, DEAE-dextran mediated transfection, cationic lipid-mediated transfection, electroporation, transduction, infection, or other methods. Such methods are described in many standard laboratory manuals, such as Davis et al., Basic Methods In Molecular Biology (1986). It is specifically contemplated that the polypeptides of the present invention may in fact be expressed by a host cell lacking a recombinant vector.

A polypeptide of this invention can be recovered and purified from recombinant cell cultures by well-known methods including ammonium sulfate or ethanol precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography, hydrophobic interaction chromatography, affinity chromatography, hydroxylapatite chromatography and lectin chromatography. Most preferably, high performance liquid chromatography ("HPLC") is employed for purification.

Polypeptides of the present invention can also be recovered from: products purified from natural sources, including bodily fluids, tissues and cells, whether directly isolated or cultured; products of chemical synthetic procedures; and products produced by recombinant techniques from a prokaryotic or eukaryotic host, including, for example, bacterial, yeast,

higher plant, insect, and mammalian cells. Depending upon the host employed in a recombinant production procedure, the polypeptides of the present invention may be glycosylated or may be non-glycosylated. In addition, polypeptides of the invention may also include an initial modified methionine residue, in some cases as a result of host-mediated processes. Thus, it is well known in the art that the N-terminal methionine encoded by the translation initiation codon generally is removed with high efficiency from any protein after translation in all eukaryotic cells. While the N-terminal methionine on most proteins also is efficiently removed in most prokaryotes, for some proteins, this prokaryotic removal process is inefficient, depending on the nature of the amino acid to which the N-terminal methionine is covalently linked.

In one embodiment, the yeast *Pichia pastoris* is used to express polypeptides of the invention in a eukaryotic system. *Pichia pastoris* is a methylotrophic yeast which can metabolize methanol as its sole carbon source. A main step in the methanol metabolization pathway is the oxidation of methanol to formaldehyde using O_2. This reaction is catalyzed by the enzyme alcohol oxidase. In order to metabolize methanol as its sole carbon source, *Pichia pastoris* must generate high levels of alcohol oxidase due, in part, to the relatively low affinity of alcohol oxidase for O_2. Consequently, in a growth medium depending on methanol as a main carbon source, the promoter region of one of the two alcohol oxidase genes (*AOX1*) is highly active. In the presence of methanol, alcohol oxidase produced from the *AOX1* gene comprises up to approximately 30% of the total soluble protein in *Pichia pastoris*. *See*, Ellis, S.B., *et al., Mol. Cell. Biol.* 5:1111-21 (1985); Koutz, P.J, *et al., Yeast* 5:167-77 (1989); Tschopp, J.F., *et al., Nucl. Acids Res.* 15:3859-76 (1987). Thus, a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, under the transcriptional regulation of all or part of the *AOX1* regulatory sequence is expressed at exceptionally high levels in *Pichia* yeast grown in the presence of methanol.

In one example, the plasmid vector pPIC9K is used to express DNA encoding a polypeptide of the invention, as set forth herein, in a *Pichea* yeast system essentially as described in "*Pichia* Protocols: Methods in Molecular Biology," D.R. Higgins and J. Cregg, eds. The Humana Press, Totowa, NJ, 1998. This expression vector allows expression and secretion of a polypeptide of the invention by virtue of the strong *AOX1* promoter linked to

the *Pichia pastoris* alkaline phosphatase (PHO) secretory signal peptide (i.e., leader) located upstream of a multiple cloning site.

Many other yeast vectors could be used in place of pPIC9K, such as, pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalpha, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, and PAO815, as one skilled in the art would readily appreciate, as long as the proposed expression construct provides appropriately located signals for transcription, translation, secretion (if desired), and the like, including an in-frame AUG as required.

In another embodiment, high-level expression of a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, may be achieved by cloning the heterologous polynucleotide of the invention into an expression vector such as, for example, pGAPZ or pGAPZalpha, and growing the yeast culture in the absence of methanol.

In addition to encompassing host cells containing the vector constructs discussed herein, the invention also encompasses primary, secondary, and immortalized host cells of vertebrate origin, particularly mammalian origin, that have been engineered to delete or replace endogenous genetic material (e.g., coding sequence), and/or to include genetic material (e.g., heterologous polynucleotide sequences) that is operably associated with polynucleotides of the invention, and which activates, alters, and/or amplifies endogenous polynucleotides. For example, techniques known in the art may be used to operably associate heterologous control regions (e.g., promoter and/or enhancer) and endogenous polynucleotide sequences via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989), the disclosures of each of which are incorporated by reference in their entireties).

In addition, polypeptides of the invention can be chemically synthesized using techniques known in the art (e.g., see Creighton, 1983, Proteins: Structures and Molecular Principles, W.H. Freeman & Co., N.Y., and Hunkapiller et al., *Nature*, 310:105-111 (1984)). For example, a polypeptide corresponding to a fragment of a polypeptide can be synthesized by use of a peptide synthesizer. Furthermore, if desired, nonclassical amino acids or chemical amino acid analogs can be introduced as a substitution or addition into the

polypeptide sequence. Non-classical amino acids include, but are not limited to, to the D-isomers of the common amino acids, 2,4-diaminobutyric acid, a-amino isobutyric acid, 4-aminobutyric acid, Abu, 2-amino butyric acid, g-Abu, e-Ahx, 6-amino hexanoic acid, Aib, 2-amino isobutyric acid, 3-amino propionic acid, ornithine, norleucine, norvaline, hydroxyproline, sarcosine, citrulline, homocitrulline, cysteic acid, t-butylglycine, t-butylalanine, phenylglycine, cyclohexylalanine, b-alanine, fluoro-amino acids, designer amino acids such as b-methyl amino acids, Ca-methyl amino acids, Na-methyl amino acids, and amino acid analogs in general. Furthermore, the amino acid can be D (dextrorotary) or L (levorotary).

Non-naturally occurring variants may be produced using art-known mutagenesis techniques, which include, but are not limited to oligonucleotide mediated mutagenesis, alanine scanning, PCR mutagenesis, site directed mutagenesis (*see, e.g.*, Carter *et al.*, *Nucl. Acids Res. 13*:4331 (1986); and Zoller *et al.*, *Nucl. Acids Res. 10*:6487 (1982)), cassette mutagenesis (*see, e.g.*, Wells *et al.*, *Gene 34*:315 (1985)), restriction selection mutagenesis (*see, e.g.*, Wells *et al.*, *Philos. Trans. R. Soc. London SerA 317*:415 (1986)).

The invention additionally, encompasses polypeptides of the present invention which are differentially modified during or after translation, e.g., by glycosylation, acetylation, phosphorylation, amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to an antibody molecule or other cellular ligand, etc. Any of numerous chemical modifications may be carried out by known techniques, including but not limited, to specific chemical cleavage by cyanogen bromide, trypsin, chymotrypsin, papain, V8 protease, $NaBH_4$; acetylation, formylation, oxidation, reduction; metabolic synthesis in the presence of tunicamycin; etc.

Additional post-translational modifications encompassed by the invention include, for example, e.g., N-linked or O-linked carbohydrate chains, processing of N-terminal or C-terminal ends), attachment of chemical moieties to the amino acid backbone, chemical modifications of N-linked or O-linked carbohydrate chains, and addition or deletion of an N-terminal methionine residue as a result of procaryotic host cell expression. The polypeptides may also be modified with a detectable label, such as an enzymatic, fluorescent, isotopic or affinity label to allow for detection and isolation of the protein.

Also provided by the invention are chemically modified derivatives of the polypeptides of the invention which may provide additional advantages such as increased

solubility, stability and circulating time of the polypeptide, or decreased immunogenicity (see U.S. Patent No. 4,179,337). The chemical moieties for derivitization may be selected from water soluble polymers such as polyethylene glycol, ethylene glycol/propylene glycol copolymers, carboxymethylcellulose, dextran, polyvinyl alcohol and the like. The polypeptides may be modified at random positions within the molecule, or at predetermined positions within the molecule and may include one, two, three or more attached chemical moieties.

The polymer may be of any molecular weight, and may be branched or unbranched. For polyethylene glycol, the preferred molecular weight is between about 1 kDa and about 100 kDa (the term "about" indicating that in preparations of polyethylene glycol, some molecules will weigh more, some less, than the stated molecular weight) for ease in handling and manufacturing. Other sizes may be used, depending on the desired therapeutic profile (e.g., the duration of sustained release desired, the effects, if any on biological activity, the ease in handling, the degree or lack of antigenicity and other known effects of the polyethylene glycol to a therapeutic protein or analog). For example, the polyethylene glycol may have an average molecular weight of about 200; 500; 1000; 1500; 2000; 2500; 3000; 3500; 4000; 4500; 5000; 5500; 6000; 6500; 7000; 7500; 8000; 8500; 9000; 9500; 10,000; 10,500; 11,000; 11,500; 12,000; 12,500; 13,000; 13,500; 14,000; 14,500; 15,000; 15,500; 16,000; 16,500; 17,000; 17,500; 18,000; 18,500; 19,000; 19,500; 20,000; 25,000; 30,000; 35,000; 40,000; 50,000; 55,000; 60,000; 65,000; 70,000; 75,000; 80,000; 85,000; 90,000; 95,000; or 100,000 kDa.

As noted above, the polyethylene glycol may have a branched structure. Branched polyethylene glycols are described, for example, in U.S. Patent No. 5,643,575; Morpurgo *et al., Appl. Biochem. Biotechnol. 56*:59-72 (1996); Vorobjev *et al., Nucleosides Nucleotides 18*:2745-2750 (1999); and Caliceti *et al., Bioconjug. Chem. 10*:638-646 (1999), the disclosures of each of which are incorporated herein by reference.

The polyethylene glycol molecules (or other chemical moieties) should be attached to the protein with consideration of effects on functional or antigenic domains of the protein. There are a number of attachment methods available to those skilled in the art, e.g., EP 0 401 384, herein incorporated by reference (coupling PEG to G-CSF), see also Malik et al., Exp. Hematol. 20:1028-1035 (1992) (reporting pegylation of GM-CSF using tresyl chloride). For example, polyethylene glycol may be covalently bound through amino acid residues via a

reactive group, such as, a free amino or carboxyl group. Reactive groups are those to which an activated polyethylene glycol molecule may be bound. The amino acid residues having a free amino group may include lysine residues and the N-terminal amino acid residues: those having a free carboxyl group may include aspartic acid residues glutamic acid residues and the C-terminal amino acid residue. Sulfhydryl groups may also be used as a reactive group for attaching the polyethylene glycol molecules. Preferred for therapeutic purposes is attachment at an amino group, such as attachment at the N-terminus or lysine group.

As suggested above, polyethylene glycol may be attached to proteins via linkage to any of a number of amino acid residues. For example, polyethylene glycol can be linked to a proteins via covalent bonds to lysine, histidine, aspartic acid, glutamic acid, or cysteine residues. One or more reaction chemistries may be employed to attach polyethylene glycol to specific amino acid residues (e.g., lysine, histidine, aspartic acid, glutamic acid, or cysteine) of the protein or to more than one type of amino acid residue (e.g., lysine, histidine, aspartic acid, glutamic acid, cysteine and combinations thereof) of the protein.

One may specifically desire proteins chemically modified at the N-terminus. Using polyethylene glycol as an illustration of the present composition, one may select from a variety of polyethylene glycol molecules (by molecular weight, branching, etc.), the proportion of polyethylene glycol molecules to protein (polypeptide) molecules in the reaction mix, the type of pegylation reaction to be performed, and the method of obtaining the selected N-terminally pegylated protein. The method of obtaining the N-terminally pegylated preparation (i.e., separating this moiety from other monopegylated moieties if necessary) may be by purification of the N-terminally pegylated material from a population of pegylated protein molecules. Selective proteins chemically modified at the N-terminus modification may be accomplished by reductive alkylation which exploits differential reactivity of different types of primary amino groups (lysine versus the N-terminal) available for derivatization in a particular protein. Under the appropriate reaction conditions, substantially selective derivatization of the protein at the N-terminus with a carbonyl group containing polymer is achieved.

As indicated above, pegylation of the proteins of the invention may be accomplished by any number of means. For example, polyethylene glycol may be attached to the protein either directly or by an intervening linker. Linkerless systems for attaching polyethylene glycol to proteins are described in Delgado *et al.*, *Crit. Rev. Thera. Drug Carrier Sys.* 9:249-

304 (1992); Francis *et al.*, *Intern. J. of Hematol.* *68*:1-18 (1998); U.S. Patent No. 4,002,531; U.S. Patent No. 5,349,052; WO 95/06058; and WO 98/32466, the disclosures of each of which are incorporated herein by reference.

One system for attaching polyethylene glycol directly to amino acid residues of proteins without an intervening linker employs tresylated MPEG, which is produced by the modification of monmethoxy polyethylene glycol (MPEG) using tresylchloride ($ClSO_2CH_2CF_3$). Upon reaction of protein with tresylated MPEG, polyethylene glycol is directly attached to amine groups of the protein. Thus, the invention includes protein-polyethylene glycol conjugates produced by reacting proteins of the invention with a polyethylene glycol molecule having a 2,2,2-trifluoreothane sulphonyl group.

Polyethylene glycol can also be attached to proteins using a number of different intervening linkers. For example, U.S. Patent No. 5,612,460, the entire disclosure of which is incorporated herein by reference, discloses urethane linkers for connecting polyethylene glycol to proteins. Protein-polyethylene glycol conjugates wherein the polyethylene glycol is attached to the protein by a linker can also be produced by reaction of proteins with compounds such as MPEG-succinimidylsuccinate, MPEG activated with 1,1'-carbonyldiimidazole, MPEG-2,4,5-trichloropenylcarbonate, MPEG-p-nitrophenolcarbonate, and various MPEG-succinate derivatives. A number additional polyethylene glycol derivatives and reaction chemistries for attaching polyethylene glycol to proteins are described in WO 98/32466, the entire disclosure of which is incorporated herein by reference. Pegylated protein products produced using the reaction chemistries set out herein are included within the scope of the invention.

The number of polyethylene glycol moieties attached to each protein of the invention (*i.e.*, the degree of substitution) may also vary. For example, the pegylated proteins of the invention may be linked, on average, to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 17, 20, or more polyethylene glycol molecules. Similarly, the average degree of substitution within ranges such as 1-3, 2-4, 3-5, 4-6, 5-7, 6-8, 7-9, 8-10, 9-11, 10-12, 11-13, 12-14, 13-15, 14-16, 15-17, 16-18, 17-19, or 18-20 polyethylene glycol moieties per protein molecule. Methods for determining the degree of substitution are discussed, for example, in Delgado *et al.*, *Crit. Rev. Thera. Drug Carrier Sys.* *9*:249-304 (1992).

The colon cancer antigen polypeptides of the invention may be in monomers or multimers (i.e., dimers, trimers, tetramers and higher multimers). Accordingly, the present

invention relates to monomers and multimers of the polypeptides of the invention, their preparation, and compositions (preferably, Therapeutics) containing them. In specific embodiments, the polypeptides of the invention are monomers, dimers, trimers or tetramers. In additional embodiments, the multimers of the invention are at least dimers, at least trimers, or at least tetramers.

Multimers encompassed by the invention may be homomers or heteromers. As used herein, the term homomer, refers to a multimer containing only polypeptides corresponding to the amino acid sequence of SEQ ID NO:Y or an amino acid sequence encoded by SEQ ID NO:X, and/or an amino acid sequence encoded by the cDNA in a related cDNA clone contained in a deposited library (including fragments, variants, splice variants, and fusion proteins, corresponding to any one of these as described herein). These homomers may contain polypeptides having identical or different amino acid sequences. In a specific embodiment, a homomer of the invention is a multimer containing only polypeptides having an identical amino acid sequence. In another specific embodiment, a homomer of the invention is a multimer containing polypeptides having different amino acid sequences. In specific embodiments, the multimer of the invention is a homodimer (e.g., containing polypeptides having identical or different amino acid sequences) or a homotrimer (e.g., containing polypeptides having identical and/or different amino acid sequences). In additional embodiments, the homomeric multimer of the invention is at least a homodimer, at least a homotrimer, or at least a homotetramer.

As used herein, the term heteromer refers to a multimer containing one or more heterologous polypeptides (i.e., polypeptides of different proteins) in addition to the polypeptides of the invention. In a specific embodiment, the multimer of the invention is a heterodimer, a heterotrimer, or a heterotetramer. In additional embodiments, the heteromeric multimer of the invention is at least a heterodimer, at least a heterotrimer, or at least a heterotetramer.

Multimers of the invention may be the result of hydrophobic, hydrophilic, ionic and/or covalent associations and/or may be indirectly linked, by for example, liposome formation. Thus, in one embodiment, multimers of the invention, such as, for example, homodimers or homotrimers, are formed when polypeptides of the invention contact one another in solution. In another embodiment, heteromultimers of the invention, such as, for example, heterotrimers or heterotetramers, are formed when polypeptides of the invention

contact antibodies to the polypeptides of the invention (including antibodies to the heterologous polypeptide sequence in a fusion protein of the invention) in solution. In other embodiments. multimers of the invention are formed by covalent associations with and/or between the polypeptides of the invention. Such covalent associations may involve one or more amino acid residues contained in the polypeptide sequence (e.g., that recited in SEQ ID NO:Y, or contained in a polypeptide encoded by SEQ ID NO:X, and/or by the cDNA in the related cDNA clone contained in a deposited library). In one instance. the covalent associations are cross-linking between cysteine residues located within the polypeptide sequences which interact in the native (i.e., naturally occurring) polypeptide. In another instance. the covalent associations are the consequence of chemical or recombinant manipulation. Alternatively, such covalent associations may involve one or more amino acid residues contained in the heterologous polypeptide sequence in a fusion protein. In one example, covalent associations are between the heterologous sequence contained in a fusion protein of the invention (see, e.g., US Patent Number 5,478,925). In a specific example, the covalent associations are between the heterologous sequence contained in a Fc fusion protein of the invention (as described herein). In another specific example, covalent associations of fusion proteins of the invention are between heterologous polypeptide sequence from another protein that is capable of forming covalently associated multimers, such as for example, oseteoprotegerin (see, e.g., International Publication NO: WO 98/49305, the contents of which are herein incorporated by reference in its entirety). In another embodiment, two or more polypeptides of the invention are joined through peptide linkers. Examples include those peptide linkers described in U.S. Pat. No. 5,073,627 (hereby incorporated by reference). Proteins comprising multiple polypeptides of the invention separated by peptide linkers may be produced using conventional recombinant DNA technology.

Another method for preparing multimer polypeptides of the invention involves use of polypeptides of the invention fused to a leucine zipper or isoleucine zipper polypeptide sequence. Leucine zipper and isoleucine zipper domains are polypeptides that promote multimerization of the proteins in which they are found. Leucine zippers were originally identified in several DNA-binding proteins (Landschulz et al., Science 240:1759, (1988)), and have since been found in a variety of different proteins. Among the known leucine zippers are naturally occurring peptides and derivatives thereof that dimerize or trimerize. Examples of leucine zipper domains suitable for producing soluble multimeric proteins of the

invention are those described in PCT application WO 94/10308, hereby incorporated by reference. Recombinant fusion proteins comprising a polypeptide of the invention fused to a polypeptide sequence that dimerizes or trimerizes in solution are expressed in suitable host cells, and the resulting soluble multimeric fusion protein is recovered from the culture supernatant using techniques known in the art.

Trimeric polypeptides of the invention may offer the advantage of enhanced biological activity. Preferred leucine zipper moieties and isoleucine moieties are those that preferentially form trimers. One example is a leucine zipper derived from lung surfactant protein D (SPD), as described in Hoppe et al. (FEBS Letters 344:191, (1994)) and in U.S. patent application Ser. No. 08/446,922, hereby incorporated by reference. Other peptides derived from naturally occurring trimeric proteins may be employed in preparing trimeric polypeptides of the invention.

In another example, proteins of the invention are associated by interactions between Flag® polypeptide sequence contained in fusion proteins of the invention containing Flag® polypeptide seuqence. In a further embodiment, associations proteins of the invention are associated by interactions between heterologous polypeptide sequence contained in Flag® fusion proteins of the invention and anti-Flag® antibody.

The multimers of the invention may be generated using chemical techniques known in the art. For example, polypeptides desired to be contained in the multimers of the invention may be chemically cross-linked using linker molecules and linker molecule length optimization techniques known in the art (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Additionally, multimers of the invention may be generated using techniques known in the art to form one or more inter-molecule cross-links between the cysteine residues located within the sequence of the polypeptides desired to be contained in the multimer (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Further, polypeptides of the invention may be routinely modified by the addition of cysteine or biotin to the C-terminus or N-terminus of the polypeptide and techniques known in the art may be applied to generate multimers containing one or more of these modified polypeptides (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Additionally, techniques known in the art may be applied to generate liposomes containing the polypeptide

components desired to be contained in the multimer of the invention (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

Alternatively, multimers of the invention may be generated using genetic engineering techniques known in the art. In one embodiment, polypeptides contained in multimers of the invention are produced recombinantly using fusion protein technology described herein or otherwise known in the art (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In a specific embodiment, polynucleotides coding for a homodimer of the invention are generated by ligating a polynucleotide sequence encoding a polypeptide of the invention to a sequence encoding a linker polypeptide and then further to a synthetic polynucleotide encoding the translated product of the polypeptide in the reverse orientation from the original C-terminus to the N-terminus (lacking the leader sequence) (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In another embodiment, recombinant techniques described herein or otherwise known in the art are applied to generate recombinant polypeptides of the invention which contain a transmembrane domain (or hyrophobic or signal peptide) and which can be incorporated by membrane reconstitution techniques into liposomes (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

Antibodies

Further polypeptides of the invention relate to antibodies and T-cell antigen receptors (TCR) which immunospecifically bind a polypeptide, polypeptide fragment, or variant of SEQ ID NO:Y, and/or an epitope, of the present invention (as determined by immunoassays well known in the art for assaying specific antibody-antigen binding). Antibodies of the invention include, but are not limited to, polyclonal, monoclonal, multispecific, human, humanized or chimeric antibodies, single chain antibodies, Fab fragments, F(ab') fragments, fragments produced by a Fab expression library, anti-idiotypic (anti-Id) antibodies (including, e.g., anti-Id antibodies to antibodies of the invention), and epitope-binding fragments of any of the above. The term "antibody," as used herein, refers to immunoglobulin molecules and immunologically active portions of immunoglobulin molecules, i.e., molecules that contain an antigen binding site that immunospecifically binds an antigen. The immunoglobulin molecules of the invention can be of any type (e.g., IgG,

IgE, IgM, IgD, IgA and IgY), class (e.g., IgG1, IgG2, IgG3, IgG4, IgA1 and IgA2) or subclass of immunoglobulin molecule.

Most preferably the antibodies are human antigen-binding antibody fragments of the present invention and include, but are not limited to, Fab, Fab' and F(ab')2, Fd, single-chain Fvs (scFv), single-chain antibodies, disulfide-linked Fvs (sdFv) and fragments comprising either a VL or VH domain. Antigen-binding antibody fragments, including single-chain antibodies, may comprise the variable region(s) alone or in combination with the entirety or a portion of the following: hinge region, CH1, CH2, and CH3 domains. Also included in the invention are antigen-binding fragments also comprising any combination of variable region(s) with a hinge region, CH1, CH2, and CH3 domains. The antibodies of the invention may be from any animal origin including birds and mammals. Preferably, the antibodies are human, murine (e.g., mouse and rat), donkey, ship rabbit, goat, guinea pig, camel, horse, or chicken. As used herein, "human" antibodies include antibodies having the amino acid sequence of a human immunoglobulin and include antibodies isolated from human immunoglobulin libraries or from animals transgenic for one or more human immunoglobulin and that do not express endogenous immunoglobulins, as described infra and, for example in, U.S. Patent No. 5,939,598 by Kucherlapati et al.

The antibodies of the present invention may be monospecific, bispecific, trispecific or of greater multispecificity. Multispecific antibodies may be specific for different epitopes of a polypeptide of the present invention or may be specific for both a polypeptide of the present invention as well as for a heterologous epitope, such as a heterologous polypeptide or solid support material. See, e.g., PCT publications WO 93/17715; WO 92/08802; WO 91/00360; WO 92/05793; Tutt, et al., J. Immunol. 147:60-69 (1991); U.S. Patent Nos. 4,474,893; 4,714,681; 4,925,648; 5,573,920; 5,601,819; Kostelny et al., J. Immunol. 148:1547-1553 (1992).

Antibodies of the present invention may be described or specified in terms of the epitope(s) or portion(s) of a polypeptide of the present invention which they recognize or specifically bind. The epitope(s) or polypeptide portion(s) may be specified as described herein, e.g., by N-terminal and C-terminal positions, or by size in contiguous amino acid residues. Antibodies which specifically bind any epitope or polypeptide of the present invention may also be excluded. Therefore, the present invention includes antibodies that

specifically bind polypeptides of the present invention, and allows for the exclusion of the same.

Antibodies of the present invention may also be described or specified in terms of their cross-reactivity. Antibodies that do not bind any other analog, ortholog, or homolog of a polypeptide of the present invention are included. Antibodies that bind polypeptides with at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 65%, at least 60%, at least 55%, and at least 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In specific embodiments, antibodies of the present invention cross-react with murine, rat and/or rabbit homologs of human proteins and the corresponding epitopes thereof. Antibodies that do not bind polypeptides with less than 95%, less than 90%, less than 85%, less than 80%, less than 75%, less than 70%, less than 65%, less than 60%, less than 55%, and less than 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In a specific embodiment, the above-described cross-reactivity is with respect to any single specific antigenic or immunogenic polypeptide, or combination(s) of 2, 3, 4, 5, or more of the specific antigenic and/or immunogenic polypeptides disclosed herein. Further included in the present invention are antibodies which bind polypeptides encoded by polynucleotides which hybridize to a polynucleotide of the present invention under stringent hybridization conditions (as described herein). Antibodies of the present invention may also be described or specified in terms of their binding affinity to a polypeptide of the invention. Preferred binding affinities include those with a dissociation constant or Kd less than 5 X 10^{-2} M, 10^{-2} M, 5 X 10^{-3} M, 10^{-3} M, 5 X 10^{-4} M, 10^{-4} M, 5 X 10^{-5} M, 10^{-5} M, 5 X 10^{-6} M, 10^{-6}M, 5 X 10^{-7} M, 10^{7} M, 5 X 10^{-8} M, 10^{-8} M, 5 X 10^{-9} M, 10^{-9} M, 5 X 10^{-10} M, 10^{-10} M, 5 X 10^{-11} M, 10^{-11} M, 5 X 10^{-12} M, $^{10-12}$ M, 5 X 10^{-13} M, 10^{-13} M, 5 X 10^{-14} M, 10^{-14} M, 5 X 10^{-15} M, or $^{10-15}$ M.

The invention also provides antibodies that competitively inhibit binding of an antibody to an epitope of the invention as determined by any method known in the art for determining competitive binding, for example, the immunoassays described herein. In preferred embodiments, the antibody competitively inhibits binding to the epitope by at least 95%, at least 90%, at least 85 %. at least 80%. at least 75%, at least 70%. at least 60%. or at least 50%.

Antibodies of the present invention may act as agonists or antagonists of the polypeptides of the present invention. For example, the present invention includes antibodies which disrupt the receptor/ligand interactions with the polypeptides of the invention either partially or fully. Preferrably, antibodies of the present invention bind an antigenic epitope disclosed herein, or a portion thereof. The invention features both receptor-specific antibodies and ligand-specific antibodies. The invention also features receptor-specific antibodies which do not prevent ligand binding but prevent receptor activation. Receptor activation (i.e., signaling) may be determined by techniques described herein or otherwise known in the art. For example, receptor activation can be determined by detecting the phosphorylation (e.g., tyrosine or serine/threonine) of the receptor or its substrate by immunoprecipitation followed by western blot analysis (for example, as described supra). In specific embodiments, antibodies are provided that inhibit ligand activity or receptor activity by at least 95%, at least 90%, at least 85%. at least 80%, at least 75%, at least 70%, at least 60%, or at least 50% of the activity in absence of the antibody.

The invention also features receptor-specific antibodies which both prevent ligand binding and receptor activation as well as antibodies that recognize the receptor-ligand complex. and, preferably, do not specifically recognize the unbound receptor or the unbound ligand. Likewise, included in the invention are neutralizing antibodies which bind the ligand and prevent binding of the ligand to the receptor, as well as antibodies which bind the ligand, thereby preventing receptor activation, but do not prevent the ligand from binding the receptor. Further included in the invention are antibodies which activate the receptor. These antibodies may act as receptor agonists, i.e., potentiate or activate either all or a subset of the biological activities of the ligand-mediated receptor activation, for example, by inducing dimerization of the receptor. The antibodies may be specified as agonists, antagonists or inverse agonists for biological activities comprising the specific biological activities of the peptides of the invention disclosed herein. The above antibody agonists can be made using methods known in the art. See, e.g., PCT publication WO 96/40281; U.S. Patent No. 5,811,097; Deng et al., Blood 92(6):1981-1988 (1998); Chen et al., Cancer Res. 58(16):3668-3678 (1998); Harrop et al., J. Immunol. 161(4):1786-1794 (1998); Zhu et al., Cancer Res. 58(15):3209-3214 (1998); Yoon et al., J. Immunol. 160(7):3170-3179 (1998); Prat et al., J. Cell. Sci. 111(Pt2):237-247 (1998); Pitard et al., J. Immunol. Methods 205(2):177-190 (1997); Liautard et al., Cytokine 9(4):233-241 (1997); Carlson et al., J. Biol.

Chem. 272(17):11295-11301 (1997); Taryman et al., Neuron 14(4):755-762 (1995); Muller et al., Structure 6(9):1153-1167 (1998); Bartunek et al., Cytokine 8(1):14-20 (1996) (which are all incorporated by reference herein in their entireties).

Antibodies of the present invention may be used, for example, but not limited to, to purify, detect, and target the polypeptides of the present invention, including both in vitro and in vivo diagnostic and therapeutic methods. For example, the antibodies have use in immunoassays for qualitatively and quantitatively measuring levels of the polypeptides of the present invention in biological samples. See, e.g., Harlow et al., Antibodies: A Laboratory Manual, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988) (incorporated by reference herein in its entirety).

As discussed in more detail below, the antibodies of the present invention may be used either alone or in combination with other compositions. The antibodies may further be recombinantly fused to a heterologous polypeptide at the N- or C-terminus or chemically conjugated (including covalently and non-covalently conjugations) to polypeptides or other compositions. For example, antibodies of the present invention may be recombinantly fused or conjugated to molecules useful as labels in detection assays and effector molecules such as heterologous polypeptides, drugs, radionuclides, or toxins. See, e.g., PCT publications WO 92/08495; WO 91/14438; WO 89/12624; U.S. Patent No. 5,314,995; and EP 396,387.

The antibodies of the invention include derivatives that are modified, i.e, by the covalent attachment of any type of molecule to the antibody such that covalent attachment does not prevent the antibody from generating an anti-idiotypic response. For example, but not by way of limitation, the antibody derivatives include antibodies that have been modified, e.g., by glycosylation, acetylation, pegylation, phosphylation, amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to a cellular ligand or other protein, etc. Any of numerous chemical modifications may be carried out by known techniques, including, but not limited to specific chemical cleavage, acetylation, formylation, metabolic synthesis of tunicamycin, etc. Additionally, the derivative may contain one or more non-classical amino acids.

The antibodies of the present invention may be generated by any suitable method known in the art. Polyclonal antibodies to an antigen-of- interest can be produced by various procedures well known in the art. For example, a polypeptide of the invention can be administered to various host animals including, but not limited to, rabbits, mice, rats, etc. to

induce the production of sera containing polyclonal antibodies specific for the antigen. Various adjuvants may be used to increase the immunological response, depending on the host species, and include but are not limited to, Freund's (complete and incomplete), mineral gels such as aluminum hydroxide, surface active substances such as lysolecithin, pluronic polyols, polyanions, peptides, oil emulsions, keyhole limpet hemocyanins, dinitrophenol, and potentially useful human adjuvants such as BCG (bacille Calmette-Guerin) and corynebacterium parvum. Such adjuvants are also well known in the art.

Monoclonal antibodies can be prepared using a wide variety of techniques known in the art including the use of hybridoma, recombinant, and phage display technologies, or a combination thereof. For example, monoclonal antibodies can be produced using hybridoma techniques including those known in the art and taught, for example, in Harlow et al., Antibodies: A Laboratory Manual, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988); Hammerling, et al., in: Monoclonal Antibodies and T-Cell Hybridomas 563-681 (Elsevier, N.Y., 1981) (said references incorporated by reference in their entireties). The term "monoclonal antibody" as used herein is not limited to antibodies produced through hybridoma technology. The term "monoclonal antibody" refers to an antibody that is derived from a single clone, including any eukaryotic, prokaryotic, or phage clone, and not the method by which it is produced.

Methods for producing and screening for specific antibodies using hybridoma technology are routine and well known in the art and are discussed in detail in the Examples. In a non-limiting example, mice can be immunized with a polypeptide of the invention or a cell expressing such peptide. Once an immune response is detected, e.g., antibodies specific for the antigen are detected in the mouse serum, the mouse spleen is harvested and splenocytes isolated. The splenocytes are then fused by well known techniques to any suitable myeloma cells, for example cells from cell line SP20 available from the ATCC. Hybridomas are selected and cloned by limited dilution. The hybridoma clones are then assayed by methods known in the art for cells that secrete antibodies capable of binding a polypeptide of the invention. Ascites fluid, which generally contains high levels of antibodies, can be generated by immunizing mice with positive hybridoma clones.

Accordingly, the present invention provides methods of generating monoclonal antibodies as well as antibodies produced by the method comprising culturing a hybridoma cell secreting an antibody of the invention wherein, preferably, the hybridoma is generated by

fusing splenocytes isolated from a mouse immunized with an antigen of the invention with myeloma cells and then screening the hybridomas resulting from the fusion for hybridoma clones that secrete an antibody able to bind a polypeptide of the invention.

Antibody fragments which recognize specific epitopes may be generated by known techniques. For example, Fab and F(ab')2 fragments of the invention may be produced by proteolytic cleavage of immunoglobulin molecules, using enzymes such as papain (to produce Fab fragments) or pepsin (to produce F(ab')2 fragments). F(ab')2 fragments contain the variable region, the light chain constant region and the CH1 domain of the heavy chain.

For example, the antibodies of the present invention can also be generated using various phage display methods known in the art. In phage display methods, functional antibody domains are displayed on the surface of phage particles which carry the polynucleotide sequences encoding them. In a particular embodiment, such phage can be utilized to display antigen binding domains expressed from a repertoire or combinatorial antibody library (e.g., human or murine). Phage expressing an antigen binding domain that binds the antigen of interest can be selected or identified with antigen, e.g., using labeled antigen or antigen bound or captured to a solid surface or bead. Phage used in these methods are typically filamentous phage including fd and M13 binding domains expressed from phage with Fab, Fv or disulfide stabilized Fv antibody domains recombinantly fused to either the phage gene III or gene VIII protein. Examples of phage display methods that can be used to make the antibodies of the present invention include those disclosed in Brinkman et al., J. Immunol. Methods 182:41-50 (1995); Ames et al., J. Immunol. Methods 184:177-186 (1995); Kettleborough et al., Eur. J. Immunol. 24:952-958 (1994); Persic et al., Gene 187 9-18 (1997); Burton et al., Advances in Immunology 57:191-280 (1994); PCT application No. PCT/GB91/01134; PCT publications WO 90/02809; WO 91/10737; WO 92/01047; WO 92/18619; WO 93/11236; WO 95/15982; WO 95/20401; and U.S. Patent Nos. 5,698,426; 5,223,409; 5,403,484; 5,580,717; 5,427,908; 5,750,753; 5,821,047; 5,571,698; 5,427,908; 5,516,637; 5,780,225; 5,658,727; 5,733,743 and 5,969,108; each of which is incorporated herein by reference in its entirety.

As described in the above references, after phage selection, the antibody coding regions from the phage can be isolated and used to generate whole antibodies, including human antibodies, or any other desired antigen binding fragment, and expressed in any desired host, including mammalian cells, insect cells, plant cells, yeast, and bacteria, e.g., as

described in detail below. For example, techniques to recombinantly produce Fab. Fab' and F(ab')2 fragments can also be employed using methods known in the art such as those disclosed in PCT publication WO 92/22324; Mullinax et al., BioTechniques 12(6):864-869 (1992); and Sawai et al., AJRI 34:26-34 (1995); and Better et al., Science 240:1041-1043 (1988) (said references incorporated by reference in their entireties).

Examples of techniques which can be used to produce single-chain Fvs and antibodies include those described in U.S. Patents 4,946,778 and 5,258,498; Huston et al., Methods in Enzymology 203:46-88 (1991); Shu et al., PNAS 90:7995-7999 (1993); and Skerra et al., Science 240:1038-1040 (1988). For some uses, including in vivo use of antibodies in humans and in vitro detection assays, it may be preferable to use chimeric, humanized, or human antibodies. A chimeric antibody is a molecule in which different portions of the antibody are derived from different animal species, such as antibodies having a variable region derived from a murine monoclonal antibody and a human immunoglobulin constant region. Methods for producing chimeric antibodies are known in the art. See e.g., Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Gillies et al., (1989) J. Immunol. Methods 125:191-202; U.S. Patent Nos. 5,807,715; 4,816,567; and 4,816397, which are incorporated herein by reference in their entirety. Humanized antibodies are antibody molecules from non-human species antibody that binds the desired antigen having one or more complementarity determining regions (CDRs) from the non-human species and a framework regions from a human immunoglobulin molecule. Often, framework residues in the human framework regions will be substituted with the corresponding residue from the CDR donor antibody to alter, preferably improve, antigen binding. These framework substitutions are identified by methods well known in the art, e.g., by modeling of the interactions of the CDR and framework residues to identify framework residues important for antigen binding and sequence comparison to identify unusual framework residues at particular positions. (See, e.g., Queen et al., U.S. Patent No. 5,585,089; Riechmann et al., Nature 332:323 (1988), which are incorporated herein by reference in their entireties.) Antibodies can be humanized using a variety of techniques known in the art including, for example, CDR-grafting (EP 239,400; PCT publication WO 91/09967; U.S. Patent Nos. 5,225,539; 5,530,101; and 5,585,089), veneering or resurfacing (EP 592,106; EP 519,596; Padlan, Molecular Immunology 28(4/5):489-498 (1991); Studnicka et al., Protein

Engineering 7(6):805-814 (1994); Roguska. et al., PNAS 91:969-973 (1994)), and chain shuffling (U.S. Patent No. 5,565,332).

Completely human antibodies are particularly desirable for therapeutic treatment of human patients. Human antibodies can be made by a variety of methods known in the art including phage display methods described above using antibody libraries derived from human immunoglobulin sequences. See also, U.S. Patent Nos. 4,444,887 and 4,716,111; and PCT publications WO 98/46645, WO 98/50433, WO 98/24893, WO 98/16654, WO 96/34096, WO 96/33735, and WO 91/10741; each of which is incorporated herein by reference in its entirety.

Human antibodies can also be produced using transgenic mice which are incapable of expressing functional endogenous immunoglobulins, but which can express human immunoglobulin genes. For example, the human heavy and light chain immunoglobulin gene complexes may be introduced randomly or by homologous recombination into mouse embryonic stem cells. Alternatively, the human variable region, constant region, and diversity region may be introduced into mouse embryonic stem cells in addition to the human heavy and light chain genes. The mouse heavy and light chain immunoglobulin genes may be rendered non-functional separately or simultaneously with the introduction of human immunoglobulin loci by homologous recombination. In particular, homozygous deletion of the JH region prevents endogenous antibody production. The modified embryonic stem cells are expanded and microinjected into blastocysts to produce chimeric mice. The chimeric mice are then bred to produce homozygous offspring which express human antibodies. The transgenic mice are immunized in the normal fashion with a selected antigen, e.g., all or a portion of a polypeptide of the invention. Monoclonal antibodies directed against the antigen can be obtained from the immunized, transgenic mice using conventional hybridoma technology. The human immunoglobulin transgenes harbored by the transgenic mice rearrange during B cell differentiation, and subsequently undergo class switching and somatic mutation. Thus, using such a technique, it is possible to produce therapeutically useful IgG, IgA, IgM and IgE antibodies. For an overview of this technology for producing human antibodies, see Lonberg and Huszar, Int. Rev. Immunol. 13:65-93 (1995). For a detailed discussion of this technology for producing human antibodies and human monoclonal antibodies and protocols for producing such antibodies, see, e.g., PCT publications WO 98/24893; WO 92/01047; WO 96/34096; WO 96/33735; European Patent

No. 0 598 877; U.S. Patent Nos. 5,413,923; 5,625,126; 5,633,425; 5,569,825; 5,661,016; 5,545,806; 5,814,318; 5,885,793; 5,916,771; and 5,939,598, which are incorporated by reference herein in their entirety. In addition, companies such as Abgenix, Inc. (Freemont, CA) and Genpharm (San Jose, CA) can be engaged to provide human antibodies directed against a selected antigen using technology similar to that described above.

Completely human antibodies which recognize a selected epitope can be generated using a technique referred to as "guided selection." In this approach a selected non-human monoclonal antibody, e.g., a mouse antibody, is used to guide the selection of a completely human antibody recognizing the same epitope. (Jespers et al., Bio/technology 12:899-903 (1988)).

Further, antibodies to the polypeptides of the invention can, in turn, be utilized to generate anti-idiotype antibodies that "mimic" polypeptides of the invention using techniques well known to those skilled in the art. (See, e.g., Greenspan & Bona, FASEB J. 7(5):437-444; (1989) and Nissinoff, J. Immunol. 147(8):2429-2438 (1991)). For example, antibodies which bind to and competitively inhibit polypeptide multimerization and/or binding of a polypeptide of the invention to a ligand can be used to generate anti-idiotypes that "mimic" the polypeptide multimerization and/or binding domain and, as a consequence, bind to and neutralize polypeptide and/or its ligand. Such neutralizing anti-idiotypes or Fab fragments of such anti-idiotypes can be used in therapeutic regimens to neutralize polypeptide ligand. For example, such anti-idiotypic antibodies can be used to bind a polypeptide of the invention and/or to bind its ligands/receptors, and thereby block its biological activity.

Polynucleotides Encoding Antibodies

The invention further provides polynucleotides comprising a nucleotide sequence encoding an antibody of the invention and fragments thereof. The invention also encompasses polynucleotides that hybridize under stringent or alternatively, under lower stringency hybridization conditions, e.g., as defined supra, to polynucleotides that encode an antibody, preferably, that specifically binds to a polypeptide of the invention, preferably, an antibody that binds to a polypeptide having the amino acid sequence of SEQ ID NO:Y.

The polynucleotides may be obtained, and the nucleotide sequence of the polynucleotides determined, by any method known in the art. For example, if the nucleotide sequence of the antibody is known, a polynucleotide encoding the antibody may be

assembled from chemically synthesized oligonucleotides (e.g., as described in Kutmeier et al., BioTechniques 17:242 (1994)), which, briefly, involves the synthesis of overlapping oligonucleotides containing portions of the sequence encoding the antibody, annealing and ligating of those oligonucleotides, and then amplification of the ligated oligonucleotides by PCR.

Alternatively, a polynucleotide encoding an antibody may be generated from nucleic acid from a suitable source. If a clone containing a nucleic acid encoding a particular antibody is not available, but the sequence of the antibody molecule is known, a nucleic acid encoding the immunoglobulin may be chemically synthesized or obtained from a suitable source (e.g., an antibody cDNA library, or a cDNA library generated from, or nucleic acid, preferably poly A+ RNA, isolated from, any tissue or cells expressing the antibody, such as hybridoma cells selected to express an antibody of the invention) by PCR amplification using synthetic primers hybridizable to the 3' and 5' ends of the sequence or by cloning using an oligonucleotide probe specific for the particular gene sequence to identify, e.g., a cDNA clone from a cDNA library that encodes the antibody. Amplified nucleic acids generated by PCR may then be cloned into replicable cloning vectors using any method well known in the art.

Once the nucleotide sequence and corresponding amino acid sequence of the antibody is determined, the nucleotide sequence of the antibody may be manipulated using methods well known in the art for the manipulation of nucleotide sequences, e.g., recombinant DNA techniques, site directed mutagenesis, PCR, etc. (see, for example, the techniques described in Sambrook et al., 1990, Molecular Cloning, A Laboratory Manual, 2d Ed., Cold Spring Harbor Laboratory, Cold Spring Harbor, NY and Ausubel et al., eds., 1998, Current Protocols in Molecular Biology, John Wiley & Sons, NY, which are both incorporated by reference herein in their entireties), to generate antibodies having a different amino acid sequence, for example to create amino acid substitutions, deletions, and/or insertions.

In a specific embodiment, the amino acid sequence of the heavy and/or light chain variable domains may be inspected to identify the sequences of the complementarity determining regions (CDRs) by methods that are well know in the art, e.g., by comparison to known amino acid sequences of other heavy and light chain variable regions to determine the regions of sequence hypervariability. Using routine recombinant DNA techniques, one or more of the CDRs may be inserted within framework regions, e.g., into human framework

regions to humanize a non-human antibody, as described supra. The framework regions may be naturally occurring or consensus framework regions, and preferably human framework regions (see, e.g., Chothia et al., J. Mol. Biol. 278: 457-479 (1998) for a listing of human framework regions). Preferably, the polynucleotide generated by the combination of the framework regions and CDRs encodes an antibody that specifically binds a polypeptide of the invention. Preferably, as discussed supra, one or more amino acid substitutions may be made within the framework regions, and, preferably, the amino acid substitutions improve binding of the antibody to its antigen. Additionally, such methods may be used to make amino acid substitutions or deletions of one or more variable region cysteine residues participating in an intrachain disulfide bond to generate antibody molecules lacking one or more intrachain disulfide bonds. Other alterations to the polynucleotide are encompassed by the present invention and within the skill of the art.

In addition, techniques developed for the production of "chimeric antibodies" (Morrison et al., Proc. Natl. Acad. Sci. 81:851-855 (1984); Neuberger et al., Nature 312:604-608 (1984); Takeda et al., Nature 314:452-454 (1985)) by splicing genes from a mouse antibody molecule of appropriate antigen specificity together with genes from a human antibody molecule of appropriate biological activity can be used. As described supra, a chimeric antibody is a molecule in which different portions are derived from different animal species, such as those having a variable region derived from a murine mAb and a human immunoglobulin constant region, e.g., humanized antibodies.

Alternatively, techniques described for the production of single chain antibodies (U.S. Patent No. 4,946,778; Bird, Science 242:423- 42 (1988); Huston et al., Proc. Natl. Acad. Sci. USA 85:5879-5883 (1988); and Ward et al., Nature 334:544-54 (1989)) can be adapted to produce single chain antibodies. Single chain antibodies are formed by linking the heavy and light chain fragments of the Fv region via an amino acid bridge, resulting in a single chain polypeptide. Techniques for the assembly of functional Fv fragments in E. coli may also be used (Skerra et al., Science 242:1038- 1041 (1988)).

Methods of Producing Antibodies

The antibodies of the invention can be produced by any method known in the art for the synthesis of antibodies, in particular, by chemical synthesis or preferably, by recombinant expression techniques.

Recombinant expression of an antibody of the invention, or fragment, derivative or analog thereof, (e.g., a heavy or light chain of an antibody of the invention or a single chain antibody of the invention), requires construction of an expression vector containing a polynucleotide that encodes the antibody. Once a polynucleotide encoding an antibody molecule or a heavy or light chain of an antibody, or portion thereof (preferably containing the heavy or light chain variable domain), of the invention has been obtained, the vector for the production of the antibody molecule may be produced by recombinant DNA technology using techniques well known in the art. Thus, methods for preparing a protein by expressing a polynucleotide containing an antibody encoding nucleotide sequence are described herein. Methods which are well known to those skilled in the art can be used to construct expression vectors containing antibody coding sequences and appropriate transcriptional and translational control signals. These methods include, for example, in vitro recombinant DNA techniques, synthetic techniques, and in vivo genetic recombination. The invention, thus, provides replicable vectors comprising a nucleotide sequence encoding an antibody molecule of the invention, or a heavy or light chain thereof, or a heavy or light chain variable domain, operably linked to a promoter. Such vectors may include the nucleotide sequence encoding the constant region of the antibody molecule (see, e.g., PCT Publication WO 86/05807; PCT Publication WO 89/01036; and U.S. Patent No. 5,122,464) and the variable domain of the antibody may be cloned into such a vector for expression of the entire heavy or light chain.

The expression vector is transferred to a host cell by conventional techniques and the transfected cells are then cultured by conventional techniques to produce an antibody of the invention. Thus, the invention includes host cells containing a polynucleotide encoding an antibody of the invention, or a heavy or light chain thereof, or a single chain antibody of the invention, operably linked to a heterologous promoter. In preferred embodiments for the expression of double-chained antibodies, vectors encoding both the heavy and light chains may be co-expressed in the host cell for expression of the entire immunoglobulin molecule, as detailed below.

A variety of host-expression vector systems may be utilized to express the antibody molecules of the invention. Such host-expression systems represent vehicles by which the coding sequences of interest may be produced and subsequently purified, but also represent cells which may, when transformed or transfected with the appropriate nucleotide coding sequences, express an antibody molecule of the invention in situ. These include but are not

limited to microorganisms such as bacteria (e.g., E. coli, B. subtilis) transformed with recombinant bacteriophage DNA, plasmid DNA or cosmid DNA expression vectors containing antibody coding sequences; yeast (e.g., Saccharomyces, Pichia) transformed with recombinant yeast expression vectors containing antibody coding sequences; insect cell systems infected with recombinant virus expression vectors (e.g., baculovirus) containing antibody coding sequences; plant cell systems infected with recombinant virus expression vectors (e.g., cauliflower mosaic virus, CaMV; tobacco mosaic virus, TMV) or transformed with recombinant plasmid expression vectors (e.g., Ti plasmid) containing antibody coding sequences; or mammalian cell systems (e.g., COS, CHO, BHK, 293, 3T3 cells) harboring recombinant expression constructs containing promoters derived from the genome of mammalian cells (e.g., metallothionein promoter) or from mammalian viruses (e.g., the adenovirus late promoter; the vaccinia virus 7.5K promoter). Preferably, bacterial cells such as Escherichia coli, and more preferably, eukaryotic cells, especially for the expression of whole recombinant antibody molecule, are used for the expression of a recombinant antibody molecule. For example, mammalian cells such as Chinese hamster ovary cells (CHO), in conjunction with a vector such as the major intermediate early gene promoter element from human cytomegalovirus is an effective expression system for antibodies (Foecking et al., Gene 45:101 (1986); Cockett et al., Bio/Technology 8:2 (1990)).

In bacterial systems, a number of expression vectors may be advantageously selected depending upon the use intended for the antibody molecule being expressed. For example, when a large quantity of such a protein is to be produced, for the generation of pharmaceutical compositions of an antibody molecule, vectors which direct the expression of high levels of fusion protein products that are readily purified may be desirable. Such vectors include, but are not limited, to the E. coli expression vector pUR278 (Ruther et al., EMBO J. 2:1791 (1983)), in which the antibody coding sequence may be ligated individually into the vector in frame with the lac Z coding region so that a fusion protein is produced; pIN vectors (Inouye & Inouye, Nucleic Acids Res. 13:3101-3109 (1985); Van Heeke & Schuster, J. Biol. Chem. 24:5503-5509 (1989)); and the like. pGEX vectors may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption and binding to matrix glutathione-agarose beads followed by elution in the presence of free

glutathione. The pGEX vectors are designed to include thrombin or factor Xa protease cleavage sites so that the cloned target gene product can be released from the GST moiety.

In an insect system. Autographa californica nuclear polyhedrosis virus (AcNPV) is used as a vector to express foreign genes. The virus grows in *Spodoptera frugiperda* cells. The antibody coding sequence may be cloned individually into non-essential regions (for example the polyhedrin gene) of the virus and placed under control of an AcNPV promoter (for example the polyhedrin promoter).

In mammalian host cells, a number of viral-based expression systems may be utilized. In cases where an adenovirus is used as an expression vector, the antibody coding sequence of interest may be ligated to an adenovirus transcription/translation control complex, e.g., the late promoter and tripartite leader sequence. This chimeric gene may then be inserted in the adenovirus genome by in vitro or in vivo recombination. Insertion in a non- essential region of the viral genome (e.g., region E1 or E3) will result in a recombinant virus that is viable and capable of expressing the antibody molecule in infected hosts. (e.g., see Logan & Shenk, Proc. Natl. Acad. Sci. USA 81:355-359 (1984)). Specific initiation signals may also be required for efficient translation of inserted antibody coding sequences. These signals include the ATG initiation codon and adjacent sequences. Furthermore, the initiation codon must be in phase with the reading frame of the desired coding sequence to ensure translation of the entire insert. These exogenous translational control signals and initiation codons can be of a variety of origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of appropriate transcription enhancer elements, transcription terminators, etc. (see Bittner et al., Methods in Enzymol. 153:51-544 (1987)).

In addition, a host cell strain may be chosen which modulates the expression of the inserted sequences, or modifies and processes the gene product in the specific fashion desired. Such modifications (e.g., glycosylation) and processing (e.g., cleavage) of protein products may be important for the function of the protein. Different host cells have characteristic and specific mechanisms for the post-translational processing and modification of proteins and gene products. Appropriate cell lines or host systems can be chosen to ensure the correct modification and processing of the foreign protein expressed. To this end, eukaryotic host cells which possess the cellular machinery for proper processing of the primary transcript, glycosylation, and phosphorylation of the gene product may be used. Such mammalian host cells include but are not limited to CHO, VERY, BHK, Hela, COS,

MDCK, 293, 3T3, WI38, and in particular, breast cancer cell lines such as, for example, BT483, Hs578T, HTB2, BT20 and T47D, and normal mammary gland cell line such as, for example, CRL7030 and Hs578Bst.

For long-term, high-yield production of recombinant proteins, stable expression is preferred. For example, cell lines which stably express the antibody molecule may be engineered. Rather than using expression vectors which contain viral origins of replication, host cells can be transformed with DNA controlled by appropriate expression control elements (e.g., promoter, enhancer, sequences, transcription terminators, polyadenylation sites, etc.), and a selectable marker. Following the introduction of the foreign DNA, engineered cells may be allowed to grow for 1-2 days in an enriched media, and then are switched to a selective media. The selectable marker in the recombinant plasmid confers resistance to the selection and allows cells to stably integrate the plasmid into their chromosomes and grow to form foci which in turn can be cloned and expanded into cell lines. This method may advantageously be used to engineer cell lines which express the antibody molecule. Such engineered cell lines may be particularly useful in screening and evaluation of compounds that interact directly or indirectly with the antibody molecule.

A number of selection systems may be used, including but not limited to the herpes simplex virus thymidine kinase (Wigler et al., Cell 11:223 (1977)), hypoxanthine-guanine phosphoribosyltransferase (Szybalska & Szybalski, Proc. Natl. Acad. Sci. USA 48:202 (1992)), and adenine phosphoribosyltransferase (Lowy et al., Cell 22:817 (1980)) genes can be employed in tk-, hgprt- or aprt- cells, respectively. Also, antimetabolite resistance can be used as the basis of selection for the following genes: dhfr, which confers resistance to methotrexate (Wigler et al., Natl. Acad. Sci. USA 77:357 (1980); O'Hare et al., Proc. Natl. Acad. Sci. USA 78:1527 (1981)); gpt, which confers resistance to mycophenolic acid (Mulligan & Berg, Proc. Natl. Acad. Sci. USA 78:2072 (1981)); neo, which confers resistance to the aminoglycoside G-418 Clinical Pharmacy 12:488-505; Wu and Wu, Biotherapy 3:87-95 (1991); Tolstoshev, Ann. Rev. Pharmacol. Toxicol. 32:573-596 (1993); Mulligan, Science 260:926-932 (1993); and Morgan and Anderson, Ann. Rev. Biochem. 62:191-217 (1993); May, 1993, TIB TECH 11(5):155-215); and hygro, which confers resistance to hygromycin (Santerre et al., Gene 30:147 (1984)). Methods commonly known in the art of recombinant DNA technology may be routinely applied to select the desired recombinant clone, and such methods are described, for example, in Ausubel et al. (eds.),

Current Protocols in Molecular Biology, John Wiley & Sons, NY (1993); Kriegler, Gene Transfer and Expression, A Laboratory Manual, Stockton Press, NY (1990); and in Chapters 12 and 13, Dracopoli et al. (eds), Current Protocols in Human Genetics, John Wiley & Sons, NY (1994); Colberre-Garapin et al., J. Mol. Biol. 150:1 (1981), which are incorporated by reference herein in their entireties.

The expression levels of an antibody molecule can be increased by vector amplification (for a review, see Bebbington and Hentschel, The use of vectors based on gene amplification for the expression of cloned genes in mammalian cells in DNA cloning, Vol.3. (Academic Press, New York, 1987)). When a marker in the vector system expressing antibody is amplifiable, increase in the level of inhibitor present in culture of host cell will increase the number of copies of the marker gene. Since the amplified region is associated with the antibody gene, production of the antibody will also increase (Crouse et al., Mol. Cell. Biol. 3:257 (1983)).

The host cell may be co-transfected with two expression vectors of the invention, the first vector encoding a heavy chain derived polypeptide and the second vector encoding a light chain derived polypeptide. The two vectors may contain identical selectable markers which enable equal expression of heavy and light chain polypeptides. Alternatively, a single vector may be used which encodes, and is capable of expressing, both heavy and light chain polypeptides. In such situations, the light chain should be placed before the heavy chain to avoid an excess of toxic free heavy chain (Proudfoot, Nature 322:52 (1986); Kohler, Proc. Natl. Acad. Sci. USA 77:2197 (1980)). The coding sequences for the heavy and light chains may comprise cDNA or genomic DNA.

Once an antibody molecule of the invention has been produced by an animal, chemically synthesized, or recombinantly expressed, it may be purified by any method known in the art for purification of an immunoglobulin molecule, for example, by chromatography (e.g., ion exchange, affinity, particularly by affinity for the specific antigen after Protein A, and sizing column chromatography), centrifugation, differential solubility, or by any other standard technique for the purification of proteins. In addition, the antibodies of the present invention or fragments thereof can be fused to heterologous polypeptide sequences described herein or otherwise known in the art, to facilitate purification.

The present invention encompasses antibodies recombinantly fused or chemically conjugated (including both covalently and non-covalently conjugations) to a polypeptide (or

portion thereof. preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention to generate fusion proteins. The fusion does not necessarily need to be direct, but may occur through linker sequences. The antibodies may be specific for antigens other than polypeptides (or portion thereof, preferably at least 10, 20, 30, 40. 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention. For example, antibodies may be used to target the polypeptides of the present invention to particular cell types, either in vitro or in vivo, by fusing or conjugating the polypeptides of the present invention to antibodies specific for particular cell surface receptors. Antibodies fused or conjugated to the polypeptides of the present invention may also be used in in vitro immunoassays and purification methods using methods known in the art. See e.g., Harbor et al., supra, and PCT publication WO 93/21232; EP 439,095; Naramura et al., Immunol. Lett. 39:91-99 (1994); U.S. Patent 5,474,981; Gillies et al., PNAS 89:1428-1432 (1992); Fell et al., J. Immunol. 146:2446-2452(1991), which are incorporated by reference in their entireties.

The present invention further includes compositions comprising the polypeptides of the present invention fused or conjugated to antibody domains other than the variable regions. For example, the polypeptides of the present invention may be fused or conjugated to an antibody Fc region. or portion thereof. The antibody portion fused to a polypeptide of the present invention may comprise the constant region, hinge region, CH1 domain, CH2 domain, and CH3 domain or any combination of whole domains or portions thereof. The polypeptides may also be fused or conjugated to the above antibody portions to form multimers. For example, Fc portions fused to the polypeptides of the present invention can form dimers through disulfide bonding between the Fc portions. Higher multimeric forms can be made by fusing the polypeptides to portions of IgA and IgM. Methods for fusing or conjugating the polypeptides of the present invention to antibody portions are known in the art. See, e.g., U.S. Patent Nos. 5,336,603; 5,622,929; 5,359,046; 5,349,053; 5,447,851; 5,112,946; EP 307,434; EP 367,166; PCT publications WO 96/04388; WO 91/06570; Ashkenazi et al., Proc. Natl. Acad. Sci. USA 88:10535-10539 (1991); Zheng et al., J. Immunol. 154:5590-5600 (1995); and Vil et al., Proc. Natl. Acad. Sci. USA 89:11337-11341(1992) (said references incorporated by reference in their entireties).

As discussed. supra, the polypeptides corresponding to a polypeptide. polypeptide fragment, or a variant of SEQ ID NO:Y may be fused or conjugated to the above antibody portions to increase the in vivo half life of the polypeptides or for use in immunoassays using

methods known in the art. Further, the polypeptides corresponding to SEQ ID NO:Y may be fused or conjugated to the above antibody portions to facilitate purification. One reported example describes chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. (EP 394,827; Traunecker et al., Nature 331:84-86 (1988). The polypeptides of the present invention fused or conjugated to an antibody having disulfide- linked dimeric structures (due to the IgG) may also be more efficient in binding and neutralizing other molecules, than the monomeric secreted protein or protein fragment alone. (Fountoulakis et al., J. Biochem. 270:3958-3964 (1995)). In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties. (EP A 232,262). Alternatively, deleting the Fc part after the fusion protein has been expressed, detected, and purified, would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. (See, Bennett et al., J. Molecular Recognition 8:52-58 (1995); Johanson et al., J. Biol. Chem. 270:9459-9471 (1995).

Moreover, the antibodies or fragments thereof of the present invention can be fused to marker sequences, such as a peptide to facilitate purification. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Other peptide tags useful for purification include, but are not limited to, the "HA" tag, which corresponds to an epitope derived from the influenza hemagglutinin protein (Wilson et al., Cell 37:767 (1984)) and the "flag" tag.

The present invention further encompasses antibodies or fragments thereof conjugated to a diagnostic or therapeutic agent. The antibodies can be used diagnostically to, for example, monitor the development or progression of a tumor as part of a clinical testing procedure to, e.g., determine the efficacy of a given treatment regimen. Detection can be facilitated by coupling the antibody to a detectable substance. Examples of detectable substances include various enzymes, prosthetic groups, fluorescent materials, luminescent

materials, bioluminescent materials, radioactive materials, positron emitting metals using various positron emission tomographies, and nonradioactive paramagnetic metal ions. The detectable substance may be coupled or conjugated either directly to the antibody (or fragment thereof) or indirectly, through an intermediate (such as, for example, a linker known in the art) using techniques known in the art. See, for example, U.S. Patent No. 4,741,900 for metal ions which can be conjugated to antibodies for use as diagnostics according to the present invention. Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, beta-galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent materials include luciferase, luciferin, and aequorin; and examples of suitable radioactive material include 125I, 131I, 111In or 99Tc.

Further, an antibody or fragment thereof may be conjugated to a therapeutic moiety such as a cytotoxin, e.g., a cytostatic or cytocidal agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, 213Bi. A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include paclitaxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, tenoposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin, dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (e.g., methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (e.g., mechlorethamine, thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclothosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis- dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (e.g., daunorubicin (formerly daunomycin) and doxorubicin), antibiotics (e.g., dactinomycin (formerly actinomycin), bleomycin, mithramycin, and anthramycin (AMC)), and anti-mitotic agents (e.g., vincristine and vinblastine).

The conjugates of the invention can be used for modifying a given biological response, the therapeutic agent or drug moiety is not to be construed as limited to classical

chemical therapeutic agents. For example, the drug moiety may be a protein or polypeptide possessing a desired biological activity. Such proteins may include, for example, a toxin such as abrin, ricin A, pseudomonas exotoxin, or diphtheria toxin; a protein such as tumor necrosis factor, a-interferon, ß-interferon, nerve growth factor, platelet derived growth factor, tissue plasminogen activator, an apoptotic agent, e.g., TNF-alpha, TNF-beta, AIM I (See, International Publication No. WO 97/33899), AIM II (See, International Publication No. WO 97/34911), Fas Ligand (Takahashi *et al., Int. Immunol.*, *6*:1567-1574 (1994)), VEGI (See, International Publication No. WO 99/23105), a thrombotic agent or an anti- angiogenic agent, e.g., angiostatin or endostatin; or, biological response modifiers such as, for example, lymphokines, interleukin-1 ("IL-1"), interleukin-2 ("IL-2"), interleukin-6 ("IL-6"), granulocyte macrophage colony stimulating factor ("GM-CSF"), granulocyte colony stimulating factor ("G-CSF"), or other growth factors.

Antibodies may also be attached to solid supports, which are particularly useful for immunoassays or purification of the target antigen. Such solid supports include, but are not limited to, glass, cellulose, polyacrylamide, nylon, polystyrene, polyvinyl chloride or polypropylene.

Techniques for conjugating such therapeutic moiety to antibodies are well known, see, e.g., Arnon et al., "Monoclonal Antibodies For Immunotargeting Of Drugs In Cancer Therapy", in Monoclonal Antibodies And Cancer Therapy, Reisfeld et al. (eds.), pp. 243-56 (Alan R. Liss, Inc. 1985); Hellstrom et al., "Antibodies For Drug Delivery", in Controlled Drug Delivery (2nd Ed.), Robinson et al. (eds.), pp. 623-53 (Marcel Dekker, Inc. 1987); Thorpe, "Antibody Carriers Of Cytotoxic Agents In Cancer Therapy: A Review", in Monoclonal Antibodies '84: Biological And Clinical Applications, Pinchera et al. (eds.), pp. 475-506 (1985); "Analysis, Results, And Future Prospective Of The Therapeutic Use Of Radiolabeled Antibody In Cancer Therapy", in Monoclonal Antibodies For Cancer Detection And Therapy, Baldwin et al. (eds.), pp. 303-16 (Academic Press 1985), and Thorpe et al., "The Preparation And Cytotoxic Properties Of Antibody-Toxin Conjugates", Immunol. Rev. 62:119-58 (1982).

Alternatively, an antibody can be conjugated to a second antibody to form an antibody heteroconjugate as described by Segal in U.S. Patent No. 4,676,980, which is incorporated herein by reference in its entirety.

An antibody, with or without a therapeutic moiety conjugated to it, administered alone or in combination with cytotoxic factor(s) and/or cytokine(s) can be used as a therapeutic.

Immunophenotyping

The antibodies of the invention may be utilized for immunophenotyping of cell lines and biological samples. The translation product of the gene of the present invention may be useful as a cell specific marker, or more specifically as a cellular marker that is differentially expressed at various stages of differentiation and/or maturation of particular cell types. Monoclonal antibodies directed against a specific epitope, or combination of epitopes, will allow for the screening of cellular populations expressing the marker. Various techniques can be utilized using monoclonal antibodies to screen for cellular populations expressing the marker(s), and include magnetic separation using antibody-coated magnetic beads, "panning" with antibody attached to a solid matrix (i.e., plate), and flow cytometry (See, e.g., U.S. Patent 5,985,660; and Morrison *et al., Cell, 96*:737-49 (1999)).

These techniques allow for the screening of particular populations of cells, such as might be found with hematological malignancies (i.e. minimal residual disease (MRD) in acute leukemic patients) and "non-self" cells in transplantations to prevent Graft-versus-Host Disease (GVHD). Alternatively, these techniques allow for the screening of hematopoietic stem and progenitor cells capable of undergoing proliferation and/or differentiation, as might be found in human umbilical cord blood.

Assays For Antibody Binding

The antibodies of the invention may be assayed for immunospecific binding by any method known in the art. The immunoassays which can be used include but are not limited to competitive and non-competitive assay systems using techniques such as western blots, radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoprecipitation assays, precipitin reactions, gel diffusion precipitin reactions, immunodiffusion assays, agglutination assays, complement-fixation assays, immunoradiometric assays, fluorescent immunoassays, protein A immunoassays, to name but a few. Such assays are routine and well known in the art (see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York,

which is incorporated by reference herein in its entirety). Exemplary immunoassays are described briefly below (but are not intended by way of limitation).

Immunoprecipitation protocols generally comprise lysing a population of cells in a lysis buffer such as RIPA buffer (1% NP-40 or Triton X- 100, 1% sodium deoxycholate, 0.1% SDS, 0.15 M NaCl, 0.01 M sodium phosphate at pH 7.2, 1% Trasylol) supplemented with protein phosphatase and/or protease inhibitors (e.g., EDTA, PMSF, aprotinin, sodium vanadate), adding the antibody of interest to the cell lysate, incubating for a period of time (e.g., 1-4 hours) at 4° C, adding protein A and/or protein G sepharose beads to the cell lysate, incubating for about an hour or more at 4° C, washing the beads in lysis buffer and resuspending the beads in SDS/sample buffer. The ability of the antibody of interest to immunoprecipitate a particular antigen can be assessed by, e.g., western blot analysis. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the binding of the antibody to an antigen and decrease the background (e.g., pre-clearing the cell lysate with sepharose beads). For further discussion regarding immunoprecipitation protocols see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York at 10.16.1.

Western blot analysis generally comprises preparing protein samples, electrophoresis of the protein samples in a polyacrylamide gel (e.g., 8%- 20% SDS-PAGE depending on the molecular weight of the antigen), transferring the protein sample from the polyacrylamide gel to a membrane such as nitrocellulose, PVDF or nylon, blocking the membrane in blocking solution (e.g., PBS with 3% BSA or non-fat milk), washing the membrane in washing buffer (e.g., PBS-Tween 20), blocking the membrane with primary antibody (the antibody of interest) diluted in blocking buffer, washing the membrane in washing buffer, blocking the membrane with a secondary antibody (which recognizes the primary antibody, e.g., an anti-human antibody) conjugated to an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) or radioactive molecule (e.g., 32P or 125I) diluted in blocking buffer, washing the membrane in wash buffer, and detecting the presence of the antigen. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected and to reduce the background noise. For further discussion regarding western blot protocols see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York at 10.8.1.

ELISAs comprise preparing antigen, coating the well of a 96 well microtiter plate with the antigen, adding the antibody of interest conjugated to a detectable compound such as an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) to the well and incubating for a period of time, and detecting the presence of the antigen. In ELISAs the antibody of interest does not have to be conjugated to a detectable compound; instead, a second antibody (which recognizes the antibody of interest) conjugated to a detectable compound may be added to the well. Further, instead of coating the well with the antigen, the antibody may be coated to the well. In this case, a second antibody conjugated to a detectable compound may be added following the addition of the antigen of interest to the coated well. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected as well as other variations of ELISAs known in the art. For further discussion regarding ELISAs see, e.g., Ausubel et al, eds. 1994. Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York at 11.2.1.

The binding affinity of an antibody to an antigen and the off-rate of an antibody-antigen interaction can be determined by competitive binding assays. One example of a competitive binding assay is a radioimmunoassay comprising the incubation of labeled antigen (e.g., 3H or 125I) with the antibody of interest in the presence of increasing amounts of unlabeled antigen, and the detection of the antibody bound to the labeled antigen. The affinity of the antibody of interest for a particular antigen and the binding off-rates can be determined from the data by scatchard plot analysis. Competition with a second antibody can also be determined using radioimmunoassays. In this case, the antigen is incubated with antibody of interest conjugated to a labeled compound (e.g., 3H or 125I) in the presence of increasing amounts of an unlabeled second antibody.

Therapeutic Uses

The present invention is further directed to antibody-based therapies which involve administering antibodies of the invention to an animal, preferably a mammal, and most preferably a human, patient for treating one or more of the disclosed diseases, disorders, or conditions. Therapeutic compounds of the invention include, but are not limited to, antibodies of the invention (including fragments, analogs and derivatives thereof as described herein) and nucleic acids encoding antibodies of the invention (including fragments, analogs and derivatives thereof and anti-idiotypic antibodies as described herein). The antibodies of

the invention can be used to treat, inhibit or prevent diseases, disorders or conditions associated with aberrant expression and/or activity of a polypeptide of the invention, including, but not limited to, any one or more of the diseases, disorders, or conditions described herein. The treatment and/or prevention of diseases, disorders, or conditions associated with aberrant expression and/or activity of a polypeptide of the invention includes, but is not limited to, alleviating symptoms associated with those diseases, disorders or conditions. Antibodies of the invention may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g. as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or hematopoietic growth factors (such as, e.g., IL-2, IL-3 and IL-7), for example, which serve to increase the number or activity of effector cells which interact with the antibodies.

The antibodies of the invention may be administered alone or in combination with other types of treatments (e.g., radiation therapy, chemotherapy, hormonal therapy, immunotherapy and anti-tumor agents). Generally, administration of products of a species origin or species reactivity (in the case of antibodies) that is the same species as that of the patient is preferred. Thus, in a preferred embodiment, human antibodies, fragments derivatives, analogs, or nucleic acids, are administered to a human patient for therapy or prophylaxis.

It is preferred to use high affinity and/or potent in vivo inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention, fragments or regions thereof, for both immunoassays directed to and therapy of disorders related to polynucleotides or polypeptides, including fragments thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides of the invention, including fragments thereof. Preferred binding affinities

include those with a dissociation constant or Kd less than 5 X 10^{-2} M, 10^{-2} M, 5 X 10^{-3} M, 10^{-3} M, 5 X 10^{-4} M, 10^{-4} M, 5 X 10^{-5} M, 10^{-5} M, 5 X 10^{-6} M, 10^{-6} M, 5 X 10^{-7} M, 10^{-7} M, 5 X 10^{-8} M, 10^{-8} M, 5 X 10^{-9} M, 10^{-9} M, 5 X 10^{-10} M, 10^{-10} M, 5 X 10^{-11} M, 10^{-11} M, 5 X 10^{-12} M, 10^{-12} M, 5 X 10^{-13} M, 10^{-13} M, 5 X 10^{-14} M, 10^{-14} M, 5 X 10^{-15} M, and 10^{-15} M.

Gene Therapy

In a specific embodiment, nucleic acids comprising sequences encoding antibodies or functional derivatives thereof, are administered to treat, inhibit or prevent a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention, by way of gene therapy. Gene therapy refers to therapy performed by the administration to a subject of an expressed or expressible nucleic acid. In this embodiment of the invention, the nucleic acids produce their encoded protein that mediates a therapeutic effect.

Any of the methods for gene therapy available in the art can be used according to the present invention. Exemplary methods are described below.

For general reviews of the methods of gene therapy, see Goldspiel et al., Clinical Pharmacy 12:488-505 (1993); Wu and Wu, Biotherapy 3:87-95 (1991); Tolstoshev, Ann. Rev. Pharmacol. Toxicol. 32:573-596 (1993); Mulligan, Science 260:926-932 (1993); and Morgan and Anderson, Ann. Rev. Biochem. 62:191-217 (1993); May, TIBTECH 11(5):155-215 (1993). Methods commonly known in the art of recombinant DNA technology which can be used are described in Ausubel et al. (eds.), Current Protocols in Molecular Biology, John Wiley & Sons, NY (1993); and Kriegler, Gene Transfer and Expression, A Laboratory Manual, Stockton Press, NY (1990).

In a preferred aspect, the compound comprises nucleic acid sequences encoding an antibody, said nucleic acid sequences being part of expression vectors that express the antibody or fragments or chimeric proteins or heavy or light chains thereof in a suitable host. In particular, such nucleic acid sequences have promoters operably linked to the antibody coding region, said promoter being inducible or constitutive, and, optionally, tissue-specific. In another particular embodiment, nucleic acid molecules are used in which the antibody coding sequences and any other desired sequences are flanked by regions that promote homologous recombination at a desired site in the genome, thus providing for intrachromosomal expression of the antibody encoding nucleic acids (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); Zijlstra et al., Nature 342:435-438 (1989).

In specific embodiments, the expressed antibody molecule is a single chain antibody; alternatively, the nucleic acid sequences include sequences encoding both the heavy and light chains. or fragments thereof, of the antibody.

Delivery of the nucleic acids into a patient may be either direct, in which case the patient is directly exposed to the nucleic acid or nucleic acid- carrying vectors, or indirect, in which case, cells are first transformed with the nucleic acids in vitro, then transplanted into the patient. These two approaches are known. respectively, as in vivo or ex vivo gene therapy.

In a specific embodiment, the nucleic acid sequences are directly administered in vivo, where it is expressed to produce the encoded product. This can be accomplished by any of numerous methods known in the art, e.g., by constructing them as part of an appropriate nucleic acid expression vector and administering it so that they become intracellular, e.g., by infection using defective or attenuated retrovirals or other viral vectors (see U.S. Patent No. 4,980,286), or by direct injection of naked DNA, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, encapsulation in liposomes, microparticles, or microcapsules, or by administering them in linkage to a peptide which is known to enter the nucleus, by administering it in linkage to a ligand subject to receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)) (which can be used to target cell types specifically expressing the receptors), etc. In another embodiment, nucleic acid-ligand complexes can be formed in which the ligand comprises a fusogenic viral peptide to disrupt endosomes, allowing the nucleic acid to avoid lysosomal degradation. In yet another embodiment, the nucleic acid can be targeted in vivo for cell specific uptake and expression, by targeting a specific receptor (see, e.g., PCT Publications WO 92/06180; WO 92/22635; WO92/20316; WO93/14188, WO 93/20221). Alternatively, the nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by homologous recombination (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); Zijlstra et al., Nature 342:435-438 (1989)).

In a specific embodiment, viral vectors that contains nucleic acid sequences encoding an antibody of the invention are used. For example, a retroviral vector can be used (see Miller et al., Meth. Enzymol. 217:581-599 (1993)). These retroviral vectors contain the components necessary for the correct packaging of the viral genome and integration into the

host cell DNA. The nucleic acid sequences encoding the antibody to be used in gene therapy are cloned into one or more vectors, which facilitates delivery of the gene into a patient. More detail about retroviral vectors can be found in Boesen et al., Biotherapy 6:291-302 (1994), which describes the use of a retroviral vector to deliver the mdr1 gene to hematopoietic stem cells in order to make the stem cells more resistant to chemotherapy. Other references illustrating the use of retroviral vectors in gene therapy are: Clowes et al., J. Clin. Invest. 93:644-651 (1994); Kiem et al., Blood 83:1467-1473 (1994); Salmons and Gunzberg, Human Gene Therapy 4:129-141 (1993): and Grossman and Wilson. Curr. Opin. in Genetics and Devel. 3:110-114 (1993).

Adenoviruses are other viral vectors that can be used in gene therapy. Adenoviruses are especially attractive vehicles for delivering genes to respiratory epithelia. Adenoviruses naturally infect respiratory epithelia where they cause a mild disease. Other targets for adenovirus-based delivery systems are liver, the central nervous system, endothelial cells, and muscle. Adenoviruses have the advantage of being capable of infecting non-dividing cells. Kozarsky and Wilson, Current Opinion in Genetics and Development 3:499-503 (1993) present a review of adenovirus-based gene therapy. Bout et al., Human Gene Therapy 5:3-10 (1994) demonstrated the use of adenovirus vectors to transfer genes to the respiratory epithelia of rhesus monkeys. Other instances of the use of adenoviruses in gene therapy can be found in Rosenfeld et al., Science 252:431-434 (1991); Rosenfeld et al., Cell 68:143- 155 (1992); Mastrangeli et al., J. Clin. Invest. 91:225-234 (1993); PCT Publication WO94/12649; and Wang, et al., Gene Therapy 2:775-783 (1995). In a preferred embodiment, adenovirus vectors are used.

Adeno-associated virus (AAV) has also been proposed for use in gene therapy (Walsh et al., Proc. Soc. Exp. Biol. Med. 204:289-300 (1993); U.S. Patent No. 5,436,146).

Another approach to gene therapy involves transferring a gene to cells in tissue culture by such methods as electroporation, lipofection, calcium phosphate mediated transfection, or viral infection. Usually, the method of transfer includes the transfer of a selectable marker to the cells. The cells are then placed under selection to isolate those cells that have taken up and are expressing the transferred gene. Those cells are then delivered to a patient.

In this embodiment, the nucleic acid is introduced into a cell prior to administration in vivo of the resulting recombinant cell. Such introduction can be carried out by any method

known in the art, including but not limited to transfection, electroporation, microinjection, infection with a viral or bacteriophage vector containing the nucleic acid sequences, cell fusion, chromosome-mediated gene transfer, microcell-mediated gene transfer, spheroplast fusion, etc. Numerous techniques are known in the art for the introduction of foreign genes into cells (see, e.g., Loeffler and Behr, Meth. Enzymol. 217:599-618 (1993); Cohen et al., Meth. Enzymol. 217:618-644 (1993); Cline, Pharmac. Ther. 29:69-92m (1985) and may be used in accordance with the present invention, provided that the necessary developmental and physiological functions of the recipient cells are not disrupted. The technique should provide for the stable transfer of the nucleic acid to the cell, so that the nucleic acid is expressible by the cell and preferably heritable and expressible by its cell progeny.

The resulting recombinant cells can be delivered to a patient by various methods known in the art. Recombinant blood cells (e.g., hematopoietic stem or progenitor cells) are preferably administered intravenously. The amount of cells envisioned for use depends on the desired effect, patient state, etc., and can be determined by one skilled in the art.

Cells into which a nucleic acid can be introduced for purposes of gene therapy encompass any desired, available cell type, and include but are not limited to epithelial cells, endothelial cells, keratinocytes, fibroblasts, muscle cells, hepatocytes; blood cells such as Tlymphocytes, Blymphocytes, monocytes, macrophages, neutrophils, eosinophils, megakaryocytes, granulocytes; various stem or progenitor cells, in particular hematopoietic stem or progenitor cells, e.g., as obtained from bone marrow, umbilical cord blood, peripheral blood, fetal liver, etc.

In a preferred embodiment, the cell used for gene therapy is autologous to the patient.

In an embodiment in which recombinant cells are used in gene therapy, nucleic acid sequences encoding an antibody are introduced into the cells such that they are expressible by the cells or their progeny, and the recombinant cells are then administered in vivo for therapeutic effect. In a specific embodiment, stem or progenitor cells are used. Any stem and/or progenitor cells which can be isolated and maintained in vitro can potentially be used in accordance with this embodiment of the present invention (see e.g. PCT Publication WO 94/08598; Stemple and Anderson, Cell 71:973-985 (1992); Rheinwald, Meth. Cell Bio. 21A:229 (1980); and Pittelkow and Scott, Mayo Clinic Proc. 61:771 (1986)).

In a specific embodiment, the nucleic acid to be introduced for purposes of gene therapy comprises an inducible promoter operably linked to the coding region, such that

expression of the nucleic acid is controllable by controlling the presence or absence of the appropriate inducer of transcription. Demonstration of Therapeutic or Prophylactic Activity

The compounds or pharmaceutical compositions of the invention are preferably tested in vitro, and then in vivo for the desired therapeutic or prophylactic activity, prior to use in humans. For example, in vitro assays to demonstrate the therapeutic or prophylactic utility of a compound or pharmaceutical composition include, the effect of a compound on a cell line or a patient tissue sample. The effect of the compound or composition on the cell line and/or tissue sample can be determined utilizing techniques known to those of skill in the art including, but not limited to, rosette formation assays and cell lysis assays. In accordance with the invention, in vitro assays which can be used to determine whether administration of a specific compound is indicated, include in vitro cell culture assays in which a patient tissue sample is grown in culture, and exposed to or otherwise administered a compound, and the effect of such compound upon the tissue sample is observed.

Therapeutic/Prophylactic Administration and Composition

The invention provides methods of treatment, inhibition and prophylaxis by administration to a subject of an effective amount of a compound or pharmaceutical composition of the invention, preferably a polypeptide or antibody of the invention. In a preferred aspect, the compound is substantially purified (e.g., substantially free from substances that limit its effect or produce undesired side-effects). The subject is preferably an animal, including but not limited to animals such as cows, pigs, horses, chickens, cats, dogs, etc., and is preferably a mammal, and most preferably human.

Formulations and methods of administration that can be employed when the compound comprises a nucleic acid or an immunoglobulin are described above; additional appropriate formulations and routes of administration can be selected from among those described herein below.

Various delivery systems are known and can be used to administer a compound of the invention, e.g., encapsulation in liposomes, microparticles, microcapsules, recombinant cells capable of expressing the compound, receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)), construction of a nucleic acid as part of a retroviral or other vector, etc. Methods of introduction include but are not limited to intradermal, intramuscular, intraperitoneal, intravenous, subcutaneous, intranasal, epidural, and oral

routes. The compounds or compositions may be administered by any convenient route, for example by infusion or bolus injection, by absorption through epithelial or mucocutaneous linings (e.g., oral mucosa, rectal and intestinal mucosa, etc.) and may be administered together with other biologically active agents. Administration can be systemic or local. In addition, it may be desirable to introduce the pharmaceutical compounds or compositions of the invention into the central nervous system by any suitable route, including intraventricular and intrathecal injection; intraventricular injection may be facilitated by an intraventricular catheter, for example, attached to a reservoir, such as an Ommaya reservoir. Pulmonary administration can also be employed, e.g., by use of an inhaler or nebulizer, and formulation with an aerosolizing agent.

In a specific embodiment, it may be desirable to administer the pharmaceutical compounds or compositions of the invention locally to the area in need of treatment; this may be achieved by, for example, and not by way of limitation, local infusion during surgery, topical application, e.g., in conjunction with a wound dressing after surgery, by injection, by means of a catheter, by means of a suppository, or by means of an implant, said implant being of a porous, non-porous, or gelatinous material, including membranes, such as sialastic membranes, or fibers. Preferably, when administering a protein, including an antibody, of the invention, care must be taken to use materials to which the protein does not absorb.

In another embodiment, the compound or composition can be delivered in a vesicle, in particular a liposome (see Langer, Science 249:1527-1533 (1990); Treat et al., in Liposomes in the Therapy of Infectious Disease and Cancer, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 353- 365 (1989); Lopez-Berestein, ibid., pp. 317-327; see generally ibid.)

In yet another embodiment, the compound or composition can be delivered in a controlled release system. In one embodiment, a pump may be used (see Langer, supra; Sefton, CRC Crit. Ref. Biomed. Eng. 14:201 (1987); Buchwald et al., Surgery 88:507 (1980); Saudek et al., N. Engl. J. Med. 321:574 (1989)). In another embodiment, polymeric materials can be used (see Medical Applications of Controlled Release, Langer and Wise (eds.), CRC Pres., Boca Raton, Florida (1974); Controlled Drug Bioavailability, Drug Product Design and Performance, Smolen and Ball (eds.), Wiley, New York (1984); Ranger and Peppas, J., Macromol. Sci. Rev. Macromol. Chem. 23:61 (1983); see also Levy et al., Science 228:190 (1985); During et al.. Ann. Neurol. 25:351 (1989); Howard et al.,

J.Neurosurg. 71:105 (1989)). In yet another embodiment, a controlled release system can be placed in proximity of the therapeutic target, i.e., the brain, thus requiring only a fraction of the systemic dose (see, e.g., Goodson, in Medical Applications of Controlled Release, supra, vol. 2, pp. 115-138 (1984)).

Other controlled release systems are discussed in the review by Langer (Science 249:1527-1533 (1990)).

In a specific embodiment where the compound of the invention is a nucleic acid encoding a protein, the nucleic acid can be administered in vivo to promote expression of its encoded protein. by constructing it as part of an appropriate nucleic acid expression vector and administering it so that it becomes intracellular, e.g., by use of a retroviral vector (see U.S. Patent No. 4.980,286), or by direct injection, or by use of microparticle bombardment (e.g.. a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, or by administering it in linkage to a homeobox- like peptide which is known to enter the nucleus (see e.g., Joliot et al., Proc. Natl. Acad. Sci. USA 88:1864-1868 (1991)), etc. Alternatively, a nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by homologous recombination.

The present invention also provides pharmaceutical compositions. Such compositions comprise a therapeutically effective amount of a compound, and a pharmaceutically acceptable carrier. In a specific embodiment, the term "pharmaceutically acceptable" means approved by a regulatory agency of the Federal or a state government or listed in the U.S. Pharmacopeia or other generally recognized pharmacopeia for use in animals, and more particularly in humans. The term "carrier" refers to a diluent, adjuvant, excipient, or vehicle with which the therapeutic is administered. Such pharmaceutical carriers can be sterile liquids, such as water and oils, including those of petroleum, animal, vegetable or synthetic origin, such as peanut oil, soybean oil, mineral oil, sesame oil and the like. Water is a preferred carrier when the pharmaceutical composition is administered intravenously. Saline solutions and aqueous dextrose and glycerol solutions can also be employed as liquid carriers, particularly for injectable solutions. Suitable pharmaceutical excipients include starch, glucose, lactose, sucrose, gelatin, malt, rice, flour, chalk, silica gel, sodium stearate, glycerol monostearate, talc, sodium chloride. dried skim milk, glycerol, propylene. glycol. water, ethanol and the like. The composition, if desired, can also contain minor amounts of wetting or emulsifying agents, or pH buffering agents. These compositions can take the form of

solutions, suspensions, emulsion, tablets, pills, capsules, powders, sustained-release formulations and the like. The composition can be formulated as a suppository, with traditional binders and carriers such as triglycerides. Oral formulation can include standard carriers such as pharmaceutical grades of mannitol, lactose, starch, magnesium stearate, sodium saccharine, cellulose, magnesium carbonate, etc. Examples of suitable pharmaceutical carriers are described in "Remington's Pharmaceutical Sciences" by E.W. Martin. Such compositions will contain a therapeutically effective amount of the compound, preferably in purified form, together with a suitable amount of carrier so as to provide the form for proper administration to the patient. The formulation should suit the mode of administration.

In a preferred embodiment, the composition is formulated in accordance with routine procedures as a pharmaceutical composition adapted for intravenous administration to human beings. Typically, compositions for intravenous administration are solutions in sterile isotonic aqueous buffer. Where necessary, the composition may also include a solubilizing agent and a local anesthetic such as lignocaine to ease pain at the site of the injection. Generally, the ingredients are supplied either separately or mixed together in unit dosage form, for example, as a dry lyophilized powder or water free concentrate in a hermetically sealed container such as an ampoule or sachette indicating the quantity of active agent. Where the composition is to be administered by infusion, it can be dispensed with an infusion bottle containing sterile pharmaceutical grade water or saline. Where the composition is administered by injection, an ampoule of sterile water for injection or saline can be provided so that the ingredients may be mixed prior to administration.

The compounds of the invention can be formulated as neutral or salt forms. Pharmaceutically acceptable salts include those formed with anions such as those derived from hydrochloric, phosphoric, acetic, oxalic, tartaric acids, etc., and those formed with cations such as those derived from sodium, potassium, ammonium, calcium, ferric hydroxides, isopropylamine, triethylamine, 2-ethylamino ethanol, histidine, procaine, etc.

The amount of the compound of the invention which will be effective in the treatment, inhibition and prevention of a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention can be determined by standard clinical techniques. In addition, in vitro assays may optionally be employed to help identify optimal dosage ranges. The precise dose to be employed in the formulation will also depend

on the route of administration, and the seriousness of the disease or disorder, and should be decided according to the judgment of the practitioner and each patient's circumstances. Effective doses may be extrapolated from dose-response curves derived from in vitro or animal model test systems.

For antibodies, the dosage administered to a patient is typically 0.1 mg/kg to 100 mg/kg of the patient's body weight. Preferably, the dosage administered to a patient is between 0.1 mg/kg and 20 mg/kg of the patient's body weight, more preferably 1 mg/kg to 10 mg/kg of the patient's body weight. Generally, human antibodies have a longer half-life within the human body than antibodies from other species due to the immune response to the foreign polypeptides. Thus, lower dosages of human antibodies and less frequent administration is often possible. Further, the dosage and frequency of administration of antibodies of the invention may be reduced by enhancing uptake and tissue penetration (e.g., into the brain) of the antibodies by modifications such as, for example, lipidation.

The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the pharmaceutical compositions of the invention. Optionally associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration.

Diagnosis and Imaging

Labeled antibodies, and derivatives and analogs thereof, which specifically bind to a polypeptide of interest can be used for diagnostic purposes to detect, diagnose, or monitor diseases, disorders, and/or conditions associated with the aberrant expression and/or activity of a polypeptide of the invention. The invention provides for the detection of aberrant expression of a polypeptide of interest, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of aberrant expression.

The invention provides a diagnostic assay for diagnosing a disorder, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of a particular disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may provide a means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the cancer.

Antibodies of the invention can be used to assay protein levels in a biological sample using classical immunohistological methods known to those of skill in the art (e.g., see Jalkanen, et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, et al., J. Cell . Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine (125I, 121I), carbon (14C), sulfur (35S), tritium (3H), indium (112In), and technetium (99Tc); luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

One aspect of the invention is the detection and diagnosis of a disease or disorder associated with aberrant expression of a polypeptide of interest in an animal, preferably a mammal and most preferably a human. In one embodiment, diagnosis comprises: a) administering (for example, parenterally, subcutaneously, or intraperitoneally) to a subject an effective amount of a labeled molecule which specifically binds to the polypeptide of interest; b) waiting for a time interval following the administering for permitting the labeled molecule to preferentially concentrate at sites in the subject where the polypeptide is expressed (and for unbound labeled molecule to be cleared to background level); c) determining background level; and d) detecting the labeled molecule in the subject, such that detection of labeled molecule above the background level indicates that the subject has a particular disease or disorder associated with aberrant expression of the polypeptide of interest. Background level can be determined by various methods including, comparing the

amount of labeled molecule detected to a standard value previously determined for a particular system.

It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of 99mTc. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which contain the specific protein. In vivo tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments." (Chapter 13 in Tumor Imaging: The Radiochemical Detection of Cancer, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982).

Depending on several variables, including the type of label used and the mode of administration, the time interval following the administration for permitting the labeled molecule to preferentially concentrate at sites in the subject and for unbound labeled molecule to be cleared to background level is 6 to 48 hours or 6 to 24 hours or 6 to 12 hours. In another embodiment the time interval following administration is 5 to 20 days or 5 to 10 days.

In an embodiment, monitoring of the disease or disorder is carried out by repeating the method for diagnosing the disease or disease, for example, one month after initial diagnosis, six months after initial diagnosis, one year after initial diagnosis, etc.

Presence of the labeled molecule can be detected in the patient using methods known in the art for in vivo scanning. These methods depend upon the type of label used. Skilled artisans will be able to determine the appropriate method for detecting a particular label. Methods and devices that may be used in the diagnostic methods of the invention include, but are not limited to, computed tomography (CT), whole body scan such as position emission tomography (PET), magnetic resonance imaging (MRI), and sonography.

In a specific embodiment, the molecule is labeled with a radioisotope and is detected in the patient using a radiation responsive surgical instrument (Thurston et al., U.S. Patent No. 5,441,050). In another embodiment, the molecule is labeled with a fluorescent compound and is detected in the patient using a fluorescence responsive scanning instrument. In another embodiment, the molecule is labeled with a positron emitting metal and is detected in the patent using positron emission-tomography. In yet another embodiment, the molecule

is labeled with a paramagnetic label and is detected in a patient using magnetic resonance imaging (MRI).

Kits

The present invention provides kits that can be used in the above methods. In one embodiment. a kit comprises an antibody of the invention, preferably a purified antibody, in one or more containers. In a specific embodiment. the kits of the present invention contain a substantially isolated polypeptide comprising an epitope which is specifically immunoreactive with an antibody included in the kit. Preferably, the kits of the present invention further comprise a control antibody which does not react with the polypeptide of interest. In another specific embodiment. the kits of the present invention contain a means for detecting the binding of an antibody to a polypeptide of interest (e.g., the antibody may be conjugated to a detectable substrate such as a fluorescent compound, an enzymatic substrate, a radioactive compound or a luminescent compound, or a second antibody which recognizes the first antibody may be conjugated to a detectable substrate).

In another specific embodiment of the present invention, the kit is a diagnostic kit for use in screening serum containing antibodies specific against proliferative and/or cancerous polynucleotides and polypeptides. Such a kit may include a control antibody that does not react with the polypeptide of interest. Such a kit may include a substantially isolated polypeptide antigen comprising an epitope which is specifically immunoreactive with at least one anti-polypeptide antigen antibody. Further, such a kit includes means for detecting the binding of said antibody to the antigen (e.g., the antibody may be conjugated to a fluorescent compound such as fluorescein or rhodamine which can be detected by flow cytometry). In specific embodiments, the kit may include a recombinantly produced or chemically synthesized polypeptide antigen. The polypeptide antigen of the kit may also be attached to a solid support.

In a more specific embodiment the detecting means of the above-described kit includes a solid support to which said polypeptide antigen is attached. Such a kit may also include a non-attached reporter-labeled anti-human antibody. In this embodiment, binding of the antibody to the polypeptide antigen can be detected by binding of the said reporter-labeled antibody.

In an additional embodiment, the invention includes a diagnostic kit for use in screening serum containing antigens of the polypeptide of the invention. The diagnostic kit includes a substantially isolated antibody specifically immunoreactive with polypeptide or polynucleotide antigens, and means for detecting the binding of the polynucleotide or polypeptide antigen to the antibody. In one embodiment, the antibody is attached to a solid support. In a specific embodiment, the antibody may be a monoclonal antibody. The detecting means of the kit may include a second, labeled monoclonal antibody. Alternatively, or in addition, the detecting means may include a labeled, competing antigen.

In one diagnostic configuration, test serum is reacted with a solid phase reagent having a surface-bound antigen obtained by the methods of the present invention. After binding with specific antigen antibody to the reagent and removing unbound serum components by washing, the reagent is reacted with reporter-labeled anti-human antibody to bind reporter to the reagent in proportion to the amount of bound anti-antigen antibody on the solid support. The reagent is again washed to remove unbound labeled antibody, and the amount of reporter associated with the reagent is determined. Typically, the reporter is an enzyme which is detected by incubating the solid phase in the presence of a suitable fluorometric, luminescent or colorimetric substrate (Sigma, St. Louis, MO).

The solid surface reagent in the above assay is prepared by known techniques for attaching protein material to solid support material, such as polymeric beads, dip sticks, 96-well plate or filter material. These attachment methods generally include non-specific adsorption of the protein to the support or covalent attachment of the protein, typically through a free amine group, to a chemically reactive group on the solid support, such as an activated carboxyl, hydroxyl, or aldehyde group. Alternatively, streptavidin coated plates can be used in conjunction with biotinylated antigen(s).

Thus, the invention provides an assay system or kit for carrying out this diagnostic method. The kit generally includes a support with surface- bound recombinant antigens, and a reporter-labeled anti-human antibody for detecting surface-bound anti-antigen antibody.

Uses of the Polynucleotides

Each of the polynucleotides identified herein can be used in numerous ways as reagents. The following description should be considered exemplary and utilizes known techniques.

The colon cancer antigen polynucleotides of the present invention are useful for chromosome identification. There exists an ongoing need to identify new chromosome markers, since few chromosome marking reagents, based on actual sequence data (repeat polymorphisms), are presently available. Each sequence is specifically targeted to and can hybridize with a particular location on an individual human chromosome, thus each polynucleotide of the present invention can routinely be used as a chromosome marker using techniques known in the art.

Briefly, sequences can be mapped to chromosomes by preparing PCR primers (preferably at least 15 bp (e.g., 15-25 bp) from the sequences shown in SEQ ID NO:X, or the complement thereto. Primers can optionally be selected using computer analysis so that primers do not span more than one predicted exon in the genomic DNA. These primers are then used for PCR screening of somatic cell hybrids containing individual human chromosomes. Only those hybrids containing the human gene corresponding to SEQ ID NO:X will yield an amplified fragment.

Similarly, somatic hybrids provide a rapid method of PCR mapping the polynucleotides to particular chromosomes. Three or more clones can be assigned per day using a single thermal cycler. Moreover, sublocalization of the polynucleotides can be achieved with panels of specific chromosome fragments. Other gene mapping strategies that can be used include in situ hybridization, prescreening with labeled flow-sorted chromosomes, preselection by hybridization to construct chromosome specific-cDNA libraries, and computer mapping techniques (See, e.g., Shuler, Trends Biotechnol 16:456-459 (1998) which is hereby incorporated by reference in its entirety).

Precise chromosomal location of the polynucleotides can also be achieved using fluorescence in situ hybridization (FISH) of a metaphase chromosomal spread. This technique uses polynucleotides as short as 500 or 600 bases; however, polynucleotides 2,000-4,000 bp are preferred. For a review of this technique, see Verma et al., "Human Chromosomes: a Manual of Basic Techniques," Pergamon Press, New York (1988).

For chromosome mapping, the polynucleotides can be used individually (to mark a single chromosome or a single site on that chromosome) or in panels (for marking multiple sites and/or multiple chromosomes).

Thus, the present invention also provides a method for chromosomal localization which involves (a) preparing PCR primers from the polynucleotide sequences in Table 3 and SEQ ID NO:X and (b) screening somatic cell hybrids containing individual chromosomes.

The polynucleotides of the present invention would likewise be useful for radiation hybrid mapping, HAPPY mapping, and long range restriction mapping. For a review of these techniques and others known in the art, see, e.g. Dear, "Genome Mapping: A Practical Approach," IRL Press at Oxford University Press, London (1997); Aydin, J. Mol. Med. 77:691-694 (1999); Hacia et al., Mol. Psychiatry 3:483-492 (1998); Herrick et al., Chromosome Res. 7:409-423 (1999); Hamilton et al., Methods Cell Biol. 62:265-280 (2000); and/or Ott, J. Hered. 90:68-70 (1999) each of which is hereby incorporated by reference in its entirety.

Once a polynucleotide has been mapped to a precise chromosomal location, the physical position of the polynucleotide can be used in linkage analysis. Linkage analysis establishes coinheritance between a chromosomal location and presentation of a particular disease. (Disease mapping data are found, for example, in V. McKusick, Mendelian Inheritance in Man (available on line through Johns Hopkins University Welch Medical Library).) Assuming 1 megabase mapping resolution and one gene per 20 kb, a cDNA precisely localized to a chromosomal region associated with the disease could be one of 50-500 potential causative genes.

Thus, once coinheritance is established, differences in a polynucleotide of the invention and the corresponding gene between affected and unaffected individuals can be examined. First, visible structural alterations in the chromosomes, such as deletions or translocations, are examined in chromosome spreads or by PCR. If no structural alterations exist, the presence of point mutations are ascertained. Mutations observed in some or all affected individuals, but not in normal individuals, indicates that the mutation may cause the disease. However, complete sequencing of the polypeptide and the corresponding gene from several normal individuals is required to distinguish the mutation from a polymorphism. If a new polymorphism is identified, this polymorphic polypeptide can be used for further linkage analysis.

Furthermore, increased or decreased expression of the gene in affected individuals as compared to unaffected individuals can be assessed using the polynucleotides of the

invention. Any of these alterations (altered expression, chromosomal rearrangement, or mutation) can be used as a diagnostic or prognostic marker.

Thus, the invention provides a method of detecting increased or decreased expression levels of the colon cancer polynucleotides in affected individuals as compared to unaffected individuals using polynucleotides of the present invention and techniques known in the art, including but not limited to the method described in Example 11. Any of these alterations (altered expression, chromosomal rearrangement, or mutation) can be used as a diagnostic or prognostic marker.

Thus, the invention also provides a diagnostic method useful during diagnosis of a colon related disorder, including colon cancer, involving measuring the expression level of colon cancer polynucleotides in colon tissue or other cells or body fluid from an individual and comparing the measured gene expression level with a standard colon cancer polynucleotide expression level, whereby an increase or decrease in the gene expression level compared to the standard is indicative of a colon related disorder.

In still another embodiment, the invention includes a kit for analyzing samples for the presence of proliferative and/or cancerous polynucleotides derived from a test subject. In a general embodiment, the kit includes at least one polynucleotide probe containing a nucleotide sequence that will specifically hybridize with a polynucleotide of the invention and a suitable container. In a specific embodiment, the kit includes two polynucleotide probes defining an internal region of the polynucleotide of the invention, where each probe has one strand containing a 31'mer-end internal to the region. In a further embodiment, the probes may be useful as primers for polymerase chain reaction amplification.

Where a diagnosis of a colon related disorder, including, for example, diagnosis of a tumor, has already been made according to conventional methods, the present invention is useful as a prognostic indicator, whereby patients exhibiting enhanced or depressed colon cancer polynucleotide expression will experience a worse clinical outcome relative to patients expressing the gene at a level nearer the standard level.

By "measuring the expression level of colon cancer polynucleotides" is intended qualitatively or quantitatively measuring or estimating the level of the colon cancer polypeptide or the level of the mRNA encoding the colon cancer polypeptide in a first biological sample either directly (e.g., by determining or estimating absolute protein level or mRNA level) or relatively (e.g., by comparing to the colon cancer polypeptide level or

mRNA level in a second biological sample). Preferably, the colon cancer polypeptide level or mRNA level in the first biological sample is measured or estimated and compared to a standard colon cancer polypeptide level or mRNA level, the standard being taken from a second biological sample obtained from an individual not having the colon related disorder or being determined by averaging levels from a population of individuals not having a colon related disorder. As will be appreciated in the art, once a standard colon cancer polypeptide level or mRNA level is known, it can be used repeatedly as a standard for comparison.

By "biological sample" is intended any biological sample obtained from an individual, body fluid, cell line, tissue culture, or other source which contains colon cancer polypeptide or the corresponding mRNA. As indicated, biological samples include body fluids (such as lymph, sera, plasma, urine, bile, synovial fluid and spinal fluid) which contain the colon cancer polypeptide, colon tissue, and other tissue sources found to express the colon cancer polypeptide. Methods for obtaining tissue biopsies and body fluids from mammals are well known in the art. Where the biological sample is to include mRNA, a tissue biopsy is the preferred source.

The method(s) provided above may preferrably be applied in a diagnostic method and/or kits in which polynucleotides and/or polypeptides of the invention are attached to a solid support. In one exemplary method, the support may be a "gene chip" or a "biological chip" as described in US Patents 5,837,832, 5,874,219, and 5,856,174. Further, such a gene chip with colon cancer polynucleotides attached may be used to identify polymorphisms between the colon cancer polynucleotide sequences, with polynucleotides isolated from a test subject. The knowledge of such polymorphisms (i.e. their location, as well as, their existence) would be beneficial in identifying disease loci for many disorders, such as for example, in neural disorders, immune system disorders, muscular disorders, reproductive disorders, gastrointestinal disorders, pulmonary disorders, cardiovascular disorders, renal disorders, proliferative disorders, and/or cancerous diseases and conditions, though most preferably in colon related proliferative, and/or cancerous diseases and conditions. Such a method is described in US Patents 5,858,659 and 5,856,104. The US Patents referenced supra are hereby incorporated by reference in their entirety herein.

The present invention encompasses colon cancer polynucleotides that are chemically synthesized, or reproduced as peptide nucleic acids (PNA), or according to other methods known in the art. The use of PNAs would serve as the preferred form if the polynucleotides

of the invention are incorporated onto a solid support, or gene chip. For the purposes of the present invention, a peptide nucleic acid (PNA) is a polyamide type of DNA analog and the monomeric units for adenine, guanine, thymine and cytosine are available commercially (Perceptive Biosystems). Certain components of DNA, such as phosphorus, phosphorus oxides, or deoxyribose derivatives, are not present in PNAs. As disclosed by P. E. Nielsen, M. Egholm, R. H. Berg and O. Buchardt, Science 254, 1497 (1991); and M. Egholm, O. Buchardt, L.Christensen, C. Behrens, S. M. Freier, D. A. Driver, R. H. Berg, S. K. Kim, B. Norden, and P. E. Nielsen, Nature 365, 666 (1993), PNAs bind specifically and tightly to complementary DNA strands and are not degraded by nucleases. In fact, PNA binds more strongly to DNA than DNA itself does. This is probably because there is no electrostatic repulsion between the two strands, and also the polyamide backbone is more flexible. Because of this, PNA/DNA duplexes bind under a wider range of stringency conditions than DNA/DNA duplexes, making it easier to perform multiplex hybridization. Smaller probes can be used than with DNA due to the strong binding. In addition, it is more likely that single base mismatches can be determined with PNA/DNA hybridization because a single mismatch in a PNA/DNA 15-mer lowers the melting point (T.sub.m) by 8°-20° C, vs. 4°-16° C for the DNA/DNA 15-mer duplex. Also, the absence of charge groups in PNA means that hybridization can be done at low ionic strengths and reduce possible interference by salt during the analysis.

The present invention have uses which include, but are not limited to, detecting cancer in mammals. In particular the invention is useful during diagnosis of pathological cell proliferative neoplasias which include, but are not limited to: acute myelogenous leukemias including acute monocytic leukemia, acute myeloblastic leukemia, acute promyelocytic leukemia, acute myelomonocytic leukemia, acute erythroleukemia, acute megakaryocytic leukemia, and acute undifferentiated leukemia, etc.; and chronic myelogenous leukemias including chronic myelomonocytic leukemia, chronic granulocytic leukemia, etc. Preferred mammals include monkeys, apes, cats, dogs, cows, pigs, horses, rabbits and humans. Particularly preferred are humans.

Pathological cell proliferative disorders are often associated with inappropriate activation of proto-oncogenes. (Gelmann, E. P. et al., "The Etiology of Acute Leukemia: Molecular Genetics and Viral Oncology," in Neoplastic Diseases of the Blood, Vol 1., Wiernik, P. H. et al. eds., 161-182 (1985)). Neoplasias are now believed to result from the

qualitative alteration of a normal cellular gene product, or from the quantitative modification of gene expression by insertion into the chromosome of a viral sequence, by chromosomal translocation of a gene to a more actively transcribed region, or by some other mechanism. (Gelmann et al., supra) It is likely that mutated or altered expression of specific genes is involved in the pathogenesis of some leukemias, among other tissues and cell types. (Gelmann et al., supra) Indeed, the human counterparts of the oncogenes involved in some animal neoplasias have been amplified or translocated in some cases of human leukemia and carcinoma. (Gelmann et al., supra)

For example, c-myc expression is highly amplified in the non-lymphocytic leukemia cell line HL-60. When HL-60 cells are chemically induced to stop proliferation, the level of c-myc is found to be downregulated. (International Publication Number WO 91/15580). However, it has been shown that exposure of HL-60 cells to a DNA construct that is complementary to the 5' end of c-myc or c-myb blocks translation of the corresponding mRNAs which downregulates expression of the c-myc or c-myb proteins and causes arrest of cell proliferation and differentiation of the treated cells. (International Publication Number WO 91/15580; Wickstrom et al., Proc. Natl. Acad. Sci. 85:1028 (1988); Anfossi et al., Proc. Natl. Acad. Sci. 86:3379 (1989)). However, the skilled artisan would appreciate the present invention's usefulness is not limited to treatment of proliferative disorders of hematopoietic cells and tissues, in light of the numerous cells and cell types of varying origins which are known to exhibit proliferative phenotypes.

In addition to the foregoing, a colon cancer antigen polynucleotide can be used to control gene expression through triple helix formation or through antisense DNA or RNA. Antisense techniques are discussed, for example, in Okano, J. Neurochem. 56: 560 (1991); "Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Triple helix formation is discussed in, for instance Lee et al., Nucleic Acids Research 6: 3073 (1979); Cooney et al., Science 241: 456 (1988); and Dervan et al., Science 251: 1360 (1991). Both methods rely on binding of the polynucleotide to a complementary DNA or RNA. For these techniques, preferred polynucleotides are usually oligonucleotides 20 to 40 bases in length and complementary to either the region of the gene involved in transcription (triple helix - see Lee et al., Nucl. Acids Res. 6:3073 (1979); Cooney et al., Science 241:456 (1988); and Dervan et al., Science 251:1360 (1991)) or to the mRNA itself (antisense - Okano, J. Neurochem. 56:560 (1991); Oligodeoxy-nucleotides as Antisense

Inhibitors of Gene Expression, CRC Press, Boca Raton. FL (1988).) Triple helix formation optimally results in a shut-off of RNA transcription from DNA, while antisense RNA hybridization blocks translation of an mRNA molecule into polypeptide. The oligonucleotide described above can also be delivered to cells such that the antisense RNA or DNA may be expressed in vivo to inhibit production of polypeptide of the present invention antigens. Both techniques are effective in model systems. and the information disclosed herein can be used to design antisense or triple helix polynucleotides in an effort to treat disease, and in particular. for the treatment of proliferative diseases and/or conditions.

Polynucleotides of the present invention are also useful in gene therapy. One goal of gene therapy is to insert a normal gene into an organism having a defective gene, in an effort to correct the genetic defect. The polynucleotides disclosed in the present invention offer a means of targeting such genetic defects in a highly accurate manner. Another goal is to insert a new gene that was not present in the host genome, thereby producing a new trait in the host cell.

The polynucleotides are also useful for identifying individuals from minute biological samples. The United States military, for example, is considering the use of restriction fragment length polymorphism (RFLP) for identification of its personnel. In this technique, an individual's genomic DNA is digested with one or more restriction enzymes, and probed on a Southern blot to yield unique bands for identifying personnel. This method does not suffer from the current limitations of "Dog Tags" which can be lost, switched, or stolen, making positive identification difficult. The polynucleotides of the present invention can be used as additional DNA markers for RFLP.

The polynucleotides of the present invention can also be used as an alternative to RFLP, by determining the actual base-by-base DNA sequence of selected portions of an individual's genome. These sequences can be used to prepare PCR primers for amplifying and isolating such selected DNA, which can then be sequenced. Using this technique, individuals can be identified because each individual will have a unique set of DNA sequences. Once an unique ID database is established for an individual, positive identification of that individual, living or dead, can be made from extremely small tissue samples.

Forensic biology also benefits from using DNA-based identification techniques as disclosed herein. DNA sequences taken from very small biological samples such as tissues,

e.g., hair or skin, or body fluids, e.g., blood, saliva, semen, synovial fluid, amniotic fluid, breast milk, lymph, pulmonary sputum or surfactant, urine, fecal matter, etc., can be amplified using PCR. In one prior art technique, gene sequences amplified from polymorphic loci, such as DQa class II HLA gene, are used in forensic biology to identify individuals. (Erlich, H., PCR Technology, Freeman and Co. (1992).) Once these specific polymorphic loci are amplified, they are digested with one or more restriction enzymes, yielding an identifying set of bands on a Southern blot probed with DNA corresponding to the DQa class II HLA gene. Similarly, polynucleotides of the present invention can be used as polymorphic markers for forensic purposes.

There is also a need for reagents capable of identifying the source of a particular tissue. Such need arises, for example, in forensics when presented with tissue of unknown origin. Appropriate reagents can comprise, for example, DNA probes or primers specific to colon or colon cancer polynucleotides prepared from the sequences of the present invention. Panels of such reagents can identify tissue by species and/or by organ type. In a similar fashion, these reagents can be used to screen tissue cultures for contamination.

The polynucleotides of the present invention are also useful as hybridization probes for differential identification of the tissue(s) or cell type(s) present in a biological sample. Similarly, polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays) or cell type(s) (e.g., immunocytochemistry assays). In addition, for a number of disorders of the above tissues or cells, significantly higher or lower levels of gene expression of the polynucleotides/polypeptides of the present invention may be detected in certain tissues (e.g., tissues expressing polypeptides and/or polynucleotides of the present invention, colon and colon cancer tissues and/or cancerous and/or wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) taken from an individual having such a disorder, relative to a "standard" gene expression level, i.e., the expression level in healthy tissue from an individual not having the disorder.

Thus, the invention provides a diagnostic method of a disorder, which involves: (a) assaying gene expression level in cells or body fluid of an individual; (b) comparing the gene expression level with a standard gene expression level, whereby an increase or decrease in the assayed gene expression level compared to the standard expression level is indicative of a disorder.

In the very least. the polynucleotides of the present invention can be used as molecular weight markers on Southern gels, as diagnostic probes for the presence of a specific mRNA in a particular cell type, as a probe to "subtract-out" known sequences in the process of discovering novel polynucleotides, for selecting and making oligomers for attachment to a "gene chip" or other support. to raise anti-DNA antibodies using DNA immunization techniques. and as an antigen to elicit an immune response.

Uses of the Polypeptides

Each of the polypeptides identified herein can be used in numerous ways. The following description should be considered exemplary and utilizes known techniques.

Polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays such as, for example, ABC immunoperoxidase (Hsu et al., J. Histochem. Cytochem. 29:577-580 (1981)) or cell type(s) (e.g., immunocytochemistry assays).

Antibodies can be used to assay levels of polypeptides encoded by polynucleotides of the invention in a biological sample using classical immunohistological methods known to those of skill in the art (e.g., see Jalkanen, et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, et al., J. Cell. Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine (^{131}I, ^{125}I, ^{123}I, ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^{3}H), indium (^{115m}In, ^{113m}In, ^{112}In, ^{111}In), and technetium (^{99}Tc, ^{99m}Tc), thallium (^{201}Ti), gallium (^{68}Ga, ^{67}Ga), palladium (^{103}Pd), molybdenum (^{99}Mo), xenon (^{133}Xe), fluorine (^{18}F), ^{153}Sm, ^{177}Lu, ^{159}Gd, ^{149}Pm, ^{140}La, ^{175}Yb, ^{166}Ho, ^{90}Y, ^{47}Sc, ^{186}Re, ^{188}Re, ^{142}Pr, ^{105}Rh, ^{97}Ru; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

In addition to assaying levels of polypeptide of the present invention in a biological sample, proteins can also be detected in vivo by imaging. Antibody labels or markers for in vivo imaging of protein include those detectable by X-radiography, NMR or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit

detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma.

A protein-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example, ^{131}I, ^{112}In, ^{99m}Tc, (^{131}I, ^{125}I, ^{123}I, ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^{3}H), indium (^{115m}In, ^{113m}In, ^{112}In, ^{111}In), and technetium (^{99}Tc, ^{99m}Tc), thallium (^{201}Ti), gallium (^{68}Ga, ^{67}Ga), palladium (^{103}Pd), molybdenum (^{99}Mo), xenon (^{133}Xe), fluorine (^{18}F, ^{153}Sm, ^{177}Lu, ^{159}Gd, ^{149}Pm, ^{140}La, ^{175}Yb, ^{166}Ho, ^{90}Y, ^{47}Sc, ^{186}Re, ^{188}Re, ^{142}Pr, ^{105}Rh, ^{97}Ru), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously or intraperitoneally) into the mammal to be examined for immune system disorder. It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of ^{99m}Tc. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which express the polypeptide encoded by a polynucleotide of the invention. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments" (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (e.g., polypeptides encoded by polynucleotides of the invention and/or antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention in association with toxins or cytotoxic prodrugs.

By "toxin" is meant one or more compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNAse, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. "Toxin" also includes a cytostatic or cytocidal agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, ^{213}Bi, or other radioisotopes such as, for example, ^{103}Pd, ^{133}Xe, ^{131}I, ^{68}Ge, ^{57}Co, ^{65}Zn, ^{85}Sr, ^{32}P, ^{35}S, ^{90}Y, ^{153}Sm, ^{153}Gd, ^{169}Yb, ^{51}Cr, ^{54}Mn, ^{75}Se, ^{113}Sn, ^{90}Yttrium, ^{117}Tin, ^{186}Rhenium, ^{166}Holmium, and ^{188}Rhenium; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

Techniques known in the art may be applied to label polypeptides of the invention (including antibodies). Such techniques include, but are not limited to, the use of bifunctional conjugating agents (see e.g., U.S. Patent Nos. 5,756,065; 5,714,631; 5,696,239; 5,652,361; 5,505,931; 5,489,425; 5,435,990; 5,428,139; 5,342,604; 5,274,119; 4,994,560; and 5,808,003; the contents of each of which are hereby incorporated by reference in its entirety).

Thus, the invention provides a diagnostic method of a disorder, which involves (a) assaying the expression level of a colon cancer polypeptide of the present invention in cells or body fluid of an individual, or more preferrably, assaying the expression level of a colon cancer polypeptide of the present invention in colon cells or sera of an individual; and (b) comparing the assayed polypeptide expression level with a standard polypeptide expression level, whereby an increase or decrease in the assayed polypeptide expression level compared to the standard expression level is indicative of a disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may provide a means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or

aggressive treatment earlier thereby preventing the development or further progression of the cancer.

Moreover, colon cancer antigen polypeptides of the present invention can be used to treat or prevent diseases or conditions such as, for example, neural disorders, immune system disorders, muscular disorders, reproductive disorders, gastrointestinal disorders, pulmonary disorders, cardiovascular disorders, renal disorders, proliferative disorders, and/or cancerous diseases and conditions, preferably proliferative disorders of the colon, and/or cancerous disease and conditions. For example, patients can be administered a polypeptide of the present invention in an effort to replace absent or decreased levels of the polypeptide (e.g., insulin), to supplement absent or decreased levels of a different polypeptide (e.g., hemoglobin S for hemoglobin B, SOD, catalase, DNA repair proteins), to inhibit the activity of a polypeptide (e.g., an oncogene or tumor supressor), to activate the activity of a polypeptide (e.g., by binding to a receptor), to reduce the activity of a membrane bound receptor by competing with it for free ligand (e.g., soluble TNF receptors used in reducing inflammation), or to bring about a desired response (e.g., blood vessel growth inhibition, enhancement of the immune response to proliferative cells or tissues).

Similarly, antibodies directed to a polypeptide of the present invention can also be used to treat disease (as described supra, and elsewhere herein). For example, administration of an antibody directed to a polypeptide of the present invention can bind, and/or neutralize the polypeptide, and/or reduce overproduction of the polypeptide. Similarly, administration of an antibody can activate the polypeptide, such as by binding to a polypeptide bound to a membrane (receptor).

At the very least, the polypeptides of the present invention can be used as molecular weight markers on SDS-PAGE gels or on molecular sieve gel filtration columns using methods well known to those of skill in the art. Polypeptides can also be used to raise antibodies, which in turn are used to measure protein expression from a recombinant cell, as a way of assessing transformation of the host cell. Moreover, the polypeptides of the present invention can be used to test the following biological activities.

Gene Therapy Methods

Another aspect of the present invention is to gene therapy methods for treating or preventing disorders, diseases and conditions. The gene therapy methods relate to the introduction of nucleic acid (DNA, RNA and antisense DNA or RNA) sequences into an animal to achieve expression of the polypeptide of the present invention. This method requires a polynucleotide which codes for a polypeptide of the present invention operatively linked to a promoter and any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques are known in the art, see, for example, WO90/11092, which is herein incorporated by reference.

Thus, for example, cells from a patient may be engineered with a polynucleotide (DNA or RNA) comprising a promoter operably linked to a polynucleotide of the present invention ex vivo, with the engineered cells then being provided to a patient to be treated with the polypeptide of the present invention. Such methods are well-known in the art. For example, see Belldegrun, A., et al., J. Natl. Cancer Inst. 85: 207-216 (1993); Ferrantini, M. et al., Cancer Research 53: 1107-1112 (1993); Ferrantini, M. et al., J. Immunology 153: 4604-4615 (1994); Kaido, T., et al., Int. J. Cancer 60: 221-229 (1995); Ogura, H., et al., Cancer Research 50: 5102-5106 (1990); Santodonato, L., et al., Human Gene Therapy 7:1-10 (1996); Santodonato, L., et al., Gene Therapy 4:1246-1255 (1997); and Zhang, J.-F. et al., Cancer Gene Therapy 3: 31-38 (1996)), which are herein incorporated by reference. In one embodiment, the cells which are engineered are arterial cells. The arterial cells may be reintroduced into the patient through direct injection to the artery, the tissues surrounding the artery, or through catheter injection.

As discussed in more detail below, the polynucleotide constructs can be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, and the like). The polynucleotide constructs may be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

In one embodiment, the polynucleotide of the present invention is delivered as a naked polynucleotide. The term "naked" polynucleotide, DNA or RNA refers to sequences that are free from any delivery vehicle that acts to assist, promote or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotide of the present invention can

also be delivered in liposome formulations and lipofectin formulations and the like can be prepared by methods well known to those skilled in the art. Such methods are described, for example, in U.S. Patent Nos. 5,593,972, 5,589,466, and 5,580,859, which are herein incorporated by reference.

The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Appropriate vectors include pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; pSVK3, pBPV, pMSG and pSVL available from Pharmacia; and pEF1/V5, pcDNA3.1, and pRc/CMV2 available from Invitrogen. Other suitable vectors will be readily apparent to the skilled artisan.

Any strong promoter known to those skilled in the art can be used for driving the expression of the polynucleotide sequence. Suitable promoters include adenoviral promoters, such as the adenoviral major late promoter; or heterologous promoters, such as the cytomegalovirus (CMV) promoter; the respiratory syncytial virus (RSV) promoter; inducible promoters, such as the MMT promoter, the metallothionein promoter; heat shock promoters; the albumin promoter; the ApoAI promoter; human globin promoters; viral thymidine kinase promoters, such as the Herpes Simplex thymidine kinase promoter; retroviral LTRs; the b-actin promoter; and human growth hormone promoters. The promoter also may be the native promoter for the polynucleotide of the present invention.

Unlike other gene therapy techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

The polynucleotide construct can be delivered to the interstitial space of tissues within the an animal, including of muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular, fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is

preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent. non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. In vivo muscle cells are particularly competent in their ability to take up and express polynucleotides.

For the naked nucleic acid sequence injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 mg/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration.

The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked DNA constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

The naked polynucleotides are delivered by any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, and so-called "gene guns". These delivery methods are known in the art.

The constructs may also be delivered with delivery vehicles such as viral sequences, viral particles, liposome formulations, lipofectin, precipitating agents, etc. Such methods of delivery are known in the art.

In certain embodiments, the polynucleotide constructs are complexed in a liposome preparation. Liposomal preparations for use in the instant invention include cationic (positively charged), anionic (negatively charged) and neutral preparations. However, cationic liposomes are particularly preferred because a tight charge complex can be formed between the cationic liposome and the polyanionic nucleic acid. Cationic liposomes have been shown to mediate intracellular delivery of plasmid DNA (Felgner et al., Proc. Natl. Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference); mRNA

(Malone et al., Proc. Natl. Acad. Sci. USA (1989) 86:6077-6081, which is herein incorporated by reference); and purified transcription factors (Debs et al., J. Biol. Chem. (1990) 265:10189-10192, which is herein incorporated by reference), in functional form.

Cationic liposomes are readily available. For example, N[1-2.3-dioleyloxy)propyl]-N,N,N-triethylammonium (DOTMA) liposomes are particularly useful and are available under the trademark Lipofectin, from GIBCO BRL, Grand Island, N.Y. (See, also, Felgner et al., Proc. Natl Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference). Other commercially available liposomes include transfectace (DDAB/DOPE) and DOTAP/DOPE (Boehringer).

Other cationic liposomes can be prepared from readily available materials using techniques well known in the art. See, e.g. PCT Publication No. WO 90/11092 (which is herein incorporated by reference) for a description of the synthesis of DOTAP (1,2-bis(oleoyloxy)-3-(trimethylammonio)propane) liposomes. Preparation of DOTMA liposomes is explained in the literature, see, e.g., P. Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417, which is herein incorporated by reference. Similar methods can be used to prepare liposomes from other cationic lipid materials.

Similarly, anionic and neutral liposomes are readily available, such as from Avanti Polar Lipids (Birmingham, Ala.), or can be easily prepared using readily available materials. Such materials include phosphatidyl, choline, cholesterol, phosphatidyl ethanolamine, dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), dioleoylphoshatidyl ethanolamine (DOPE), among others. These materials can also be mixed with the DOTMA and DOTAP starting materials in appropriate ratios. Methods for making liposomes using these materials are well known in the art.

For example, commercially dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), and dioleoylphosphatidyl ethanolamine (DOPE) can be used in various combinations to make conventional liposomes, with or without the addition of cholesterol. Thus, for example, DOPG/DOPC vesicles can be prepared by drying 50 mg each of DOPG and DOPC under a stream of nitrogen gas into a sonication vial. The sample is placed under a vacuum pump overnight and is hydrated the following day with deionized water. The sample is then sonicated for 2 hours in a capped vial, using a Heat Systems model 350 sonicator equipped with an inverted cup (bath type) probe at the maximum setting while the bath is circulated at 15EC. Alternatively, negatively charged

vesicles can be prepared without sonication to produce multilamellar vesicles or by extrusion through nucleopore membranes to produce unilamellar vesicles of discrete size. Other methods are known and available to those of skill in the art.

The liposomes can comprise multilamellar vesicles (MLVs), small unilamellar vesicles (SUVs), or large unilamellar vesicles (LUVs), with SUVs being preferred. The various liposome-nucleic acid complexes are prepared using methods well known in the art. See, e.g., Straubinger et al., Methods of Immunology (1983), 101:512-527, which is herein incorporated by reference. For example, MLVs containing nucleic acid can be prepared by depositing a thin film of phospholipid on the walls of a glass tube and subsequently hydrating with a solution of the material to be encapsulated. SUVs are prepared by extended sonication of MLVs to produce a homogeneous population of unilamellar liposomes. The material to be entrapped is added to a suspension of preformed MLVs and then sonicated. When using liposomes containing cationic lipids, the dried lipid film is resuspended in an appropriate solution such as sterile water or an isotonic buffer solution such as 10 mM Tris/NaCl, sonicated, and then the preformed liposomes are mixed directly with the DNA. The liposome and DNA form a very stable complex due to binding of the positively charged liposomes to the cationic DNA. SUVs find use with small nucleic acid fragments. LUVs are prepared by a number of methods, well known in the art. Commonly used methods include Ca^{2+}-EDTA chelation (Papahadjopoulos et al., Biochim. Biophys. Acta (1975) 394:483; Wilson et al., Cell (1979) 17:77); ether injection (Deamer, D. and Bangham, A., Biochim. Biophys. Acta (1976) 443:629; Ostro et al., Biochem. Biophys. Res. Commun. (1977) 76:836; Fraley et al., Proc. Natl. Acad. Sci. USA (1979) 76:3348); detergent dialysis (Enoch, H. and Strittmatter, P., Proc. Natl. Acad. Sci. USA (1979) 76:145); and reverse-phase evaporation (REV) (Fraley et al., J. Biol. Chem. (1980) 255:10431; Szoka, F. and Papahadjopoulos, D., Proc. Natl. Acad. Sci. USA (1978) 75:145; Schaefer-Ridder et al., Science (1982) 215:166), which are herein incorporated by reference.

Generally, the ratio of DNA to liposomes will be from about 10:1 to about 1:10. Preferably, the ration will be from about 5:1 to about 1:5. More preferably, the ration will be about 3:1 to about 1:3. Still more preferably, the ratio will be about 1:1.

U.S. Patent No. 5,676,954 (which is herein incorporated by reference) reports on the injection of genetic material, complexed with cationic liposomes carriers, into mice. U.S. Patent Nos. 4,897,355, 4,946,787, 5,049,386, 5,459,127, 5,589,466, 5,693,622, 5,580,859,

5.703.055, and international publication no. WO 94/9469 (which are herein incorporated by reference) provide cationic lipids for use in transfecting DNA into cells and mammals. U.S. Patent Nos. 5,589,466, 5,693,622, 5,580,859, 5,703,055, and international publication no. WO 94/9469 (which are herein incorporated by reference) provide methods for delivering DNA-cationic lipid complexes to mammals.

In certain embodiments, cells are engineered, ex vivo or in vivo, using a retroviral particle containing RNA which comprises a sequence encoding a polypeptide of the present invention. Retroviruses from which the retroviral plasmid vectors may be derived include, but are not limited to, Moloney Murine Leukemia Virus, spleen necrosis virus, Rous sarcoma Virus, Harvey Sarcoma Virus, avian leukosis virus, gibbon ape leukemia virus, human immunodeficiency virus, Myeloproliferative Sarcoma Virus, and mammary tumor virus.

The retroviral plasmid vector is employed to transduce packaging cell lines to form producer cell lines. Examples of packaging cells which may be transfected include, but are not limited to, the PE501, PA317, R-2, R-AM, PA12, T19-14X, VT-19-17-H2, RCRE, RCRIP, GP+E-86, GP+envAm12, and DAN cell lines as described in Miller, Human Gene Therapy 1:5-14 (1990), which is incorporated herein by reference in its entirety. The vector may transduce the packaging cells through any means known in the art. Such means include, but are not limited to, electroporation, the use of liposomes, and $CaPO_4$ precipitation. In one alternative, the retroviral plasmid vector may be encapsulated into a liposome, or coupled to a lipid, and then administered to a host.

The producer cell line generates infectious retroviral vector particles which include polynucleotide encoding a polypeptide of the present invention. Such retroviral vector particles then may be employed, to transduce eukaryotic cells, either in vitro or in vivo. The transduced eukaryotic cells will express a polypeptide of the present invention.

In certain other embodiments, cells are engineered, ex vivo or in vivo, with polynucleotide contained in an adenovirus vector. Adenovirus can be manipulated such that it encodes and expresses a polypeptide of the present invention, and at the same time is inactivated in terms of its ability to replicate in a normal lytic viral life cycle. Adenovirus expression is achieved without integration of the viral DNA into the host cell chromosome, thereby alleviating concerns about insertional mutagenesis. Furthermore, adenoviruses have been used as live enteric vaccines for many years with an excellent safety profile (Schwartz, A. R. et al. (1974) Am. Rev. Respir. Dis.109:233-238). Finally, adenovirus mediated gene

transfer has been demonstrated in a number of instances including transfer of alpha-1-antitrypsin and CFTR to the lungs of cotton rats (Rosenfeld, M. A. et al. (1991) Science 252:431-434; Rosenfeld et al., (1992) Cell 68:143-155). Furthermore, extensive studies to attempt to establish adenovirus as a causative agent in human cancer were uniformly negative (Green, M. et al. (1979) Proc. Natl. Acad. Sci. USA 76:6606).

Suitable adenoviral vectors useful in the present invention are described, for example, in Kozarsky and Wilson, Curr. Opin. Genet. Devel. 3:499-503 (1993); Rosenfeld et al., Cell 68:143-155 (1992); Engelhardt et al., Human Genet. Ther. 4:759-769 (1993); Yang et al., Nature Genet. 7:362-369 (1994); Wilson et al., Nature 365:691-692 (1993); and U.S. Patent No. 5,652,224, which are herein incorporated by reference. For example, the adenovirus vector Ad2 is useful and can be grown in human 293 cells. These cells contain the E1 region of adenovirus and constitutively express Ela and Elb, which complement the defective adenoviruses by providing the products of the genes deleted from the vector. In addition to Ad2, other varieties of adenovirus (e.g., Ad3, Ad5, and Ad7) are also useful in the present invention.

Preferably, the adenoviruses used in the present invention are replication deficient. Replication deficient adenoviruses require the aid of a helper virus and/or packaging cell line to form infectious particles. The resulting virus is capable of infecting cells and can express a polynucleotide of interest which is operably linked to a promoter, but cannot replicate in most cells. Replication deficient adenoviruses may be deleted in one or more of all or a portion of the following genes: E1a, E1b, E3, E4, E2a, or L1 through L5.

In certain other embodiments, the cells are engineered, ex vivo or in vivo, using an adeno-associated virus (AAV). AAVs are naturally occurring defective viruses that require helper viruses to produce infectious particles (Muzyczka, N., Curr. Topics in Microbiol. Immunol. 158:97 (1992)). It is also one of the few viruses that may integrate its DNA into non-dividing cells. Vectors containing as little as 300 base pairs of AAV can be packaged and can integrate, but space for exogenous DNA is limited to about 4.5 kb. Methods for producing and using such AAVs are known in the art. See, for example, U.S. Patent Nos. 5,139,941, 5,173,414, 5,354,678, 5,436,146, 5,474,935, 5,478,745, and 5,589,377.

For example, an appropriate AAV vector for use in the present invention will include all the sequences necessary for DNA replication, encapsidation, and host-cell integration. The polynucleotide construct is inserted into the AAV vector using standard cloning

methods, such as those found in Sambrook et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press (1989). The recombinant AAV vector is then transfected into packaging cells which are infected with a helper virus, using any standard technique, including lipofection, electroporation, calcium phosphate precipitation, etc. Appropriate helper viruses include adenoviruses, cytomegaloviruses, vaccinia viruses, or herpes viruses. Once the packaging cells are transfected and infected, they will produce infectious AAV viral particles which contain the polynucleotide construct. These viral particles are then used to transduce eukaryotic cells, either ex vivo or in vivo. The transduced cells will contain the polynucleotide construct integrated into its genome, and will express a polypeptide of the invention.

Another method of gene therapy involves operably associating heterologous control regions and endogenous polynucleotide sequences (e.g. encoding a polypeptide of the present invention) via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989). This method involves the activation of a gene which is present in the target cells, but which is not normally expressed in the cells, or is expressed at a lower level than desired.

Polynucleotide constructs are made, using standard techniques known in the art, which contain the promoter with targeting sequences flanking the promoter. Suitable promoters are described herein. The targeting sequence is sufficiently complementary to an endogenous sequence to permit homologous recombination of the promoter-targeting sequence with the endogenous sequence. The targeting sequence will be sufficiently near the 5' end of the desired endogenous polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination.

The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter. The amplified promoter and targeting sequences are digested and ligated together.

The promoter-targeting sequence construct is delivered to the cells, either as naked polynucleotide, or in conjunction with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, whole viruses, lipofection, precipitating agents, etc., described in more detail above. The P promoter-targeting sequence can be delivered by any method, included direct needle injection, intravenous injection, topical administration, catheter infusion, particle accelerators, etc. The methods are described in more detail below.

The promoter-targeting sequence construct is taken up by cells. Homologous recombination between the construct and the endogenous sequence takes place, such that an endogenous sequence is placed under the control of the promoter. The promoter then drives the expression of the endogenous sequence.

Preferably, the polynucleotide encoding a polypeptide of the present invention contains a secretory signal sequence that facilitates secretion of the protein. Typically, the signal sequence is positioned in the coding region of the polynucleotide to be expressed towards or at the 5' end of the coding region. The signal sequence may be homologous or heterologous to the polynucleotide of interest and may be homologous or heterologous to the cells to be transfected. Additionally, the signal sequence may be chemically synthesized using methods known in the art.

Any mode of administration of any of the above-described polynucleotides constructs can be used so long as the mode results in the expression of one or more molecules in an amount sufficient to provide a therapeutic effect. This includes direct needle injection, systemic injection, catheter infusion, biolistic injectors, particle accelerators (i.e., "gene guns"), gelfoam sponge depots, other commercially available depot materials, osmotic pumps (e.g., Alza minipumps), oral or suppositorial solid (tablet or pill) pharmaceutical formulations, and decanting or topical applications during surgery. For example, direct injection of naked calcium phosphate-precipitated plasmid into rat liver and rat spleen or a protein-coated plasmid into the portal vein has resulted in gene expression of the foreign gene in the rat livers (Kaneda et al., Science 243:375 (1989)).

A preferred method of local administration is by direct injection. Preferably, a recombinant molecule of the present invention complexed with a delivery vehicle is administered by direct injection into or locally within the area of arteries. Administration of a composition locally within the area of arteries refers to injecting the composition centimeters and preferably, millimeters within arteries.

Another method of local administration is to contact a polynucleotide construct of the present invention in or around a surgical wound. For example, a patient can undergo surgery and the polynucleotide construct can be coated on the surface of tissue inside the wound or the construct can be injected into areas of tissue inside the wound.

Therapeutic compositions useful in systemic administration, include recombinant molecules of the present invention complexed to a targeted delivery vehicle of the present invention. Suitable delivery vehicles for use with systemic administration comprise liposomes comprising ligands for targeting the vehicle to a particular site.

Preferred methods of systemic administration, include intravenous injection. aerosol, oral and percutaneous (topical) delivery. Intravenous injections can be performed using methods standard in the art. Aerosol delivery can also be performed using methods standard in the art (see. for example, Stribling et al.. Proc. Natl. Acad. Sci. USA 189:11277-11281, 1992, which is incorporated herein by reference). Oral delivery can be performed by complexing a polynucleotide construct of the present invention to a carrier capable of withstanding degradation by digestive enzymes in the gut of an animal. Examples of such carriers. include plastic capsules or tablets, such as those known in the art. Topical delivery can be performed by mixing a polynucleotide construct of the present invention with a lipophilic reagent (e.g., DMSO) that is capable of passing into the skin.

Determining an effective amount of substance to be delivered can depend upon a number of factors including, for example, the chemical structure and biological activity of the substance, the age and weight of the animal, the precise condition requiring treatment and its severity, and the route of administration. The frequency of treatments depends upon a number of factors, such as the amount of polynucleotide constructs administered per dose, as well as the health and history of the subject. The precise amount, number of doses, and timing of doses will be determined by the attending physician or veterinarian.

Therapeutic compositions of the present invention can be administered to any animal, preferably to mammals and birds. Preferred mammals include humans, dogs, cats, mice, rats, rabbits sheep, cattle, horses and pigs, with humans being particularly preferred.

Biological Activities

Polynucleotides or polypeptides, or agonists or antagonists of the present invention, can be used in assays to test for one or more biological activities. If these polynucleotides or

polypeptides. or agonists or antagonists of the present invention, do exhibit activity in a particular assay. it is likely that these molecules may be involved in the diseases associated with the biological activity. Thus. the polynucleotides and polypeptides. and agonists or antagonists could be used to treat the associated disease.

Immune Activity

A polypeptide or polynucleotide. or agonists or antagonists of the present invention may be useful in treating deficiencies or disorders of the immune system, by activating or inhibiting the proliferation, differentiation. or mobilization (chemotaxis) of immune cells. Immune cells develop through a process called hematopoiesis. producing myeloid (platelets, red blood cells. neutrophils, and macrophages) and lymphoid (B and T lymphocytes) cells from pluripotent stem cells. The etiology of these immune deficiencies or disorders may be genetic, somatic, such as cancer or some autoimmune disorders, acquired (e.g., by chemotherapy or toxins), or infectious. Moreover, polynucleotides or polypeptides, or agonists or antagonists of the present invention can be used as a marker or detector of a particular immune system disease or disorder.

Polynucleotides or polypeptides, or agonists or antagonists of the present invention may be useful in treating or detecting deficiencies or disorders of hematopoietic cells. Polynucleotides or polypeptides, or agonists or antagonists of the present invention could be used to increase differentiation and proliferation of hematopoietic cells, including the pluripotent stem cells, in an effort to treat those disorders associated with a decrease in certain (or many) types hematopoietic cells. Examples of immunologic deficiency syndromes include, but are not limited to: blood protein disorders (e.g. agammaglobulinemia, dysgammaglobulinemia), ataxia telangiectasia, common variable immunodeficiency, Digeorge Syndrome, HIV infection, HTLV-BLV infection, leukocyte adhesion deficiency syndrome, lymphopenia, phagocyte bactericidal dysfunction, severe combined immunodeficiency (SCIDs), Wiskott-Aldrich Disorder, anemia, thrombocytopenia, or hemoglobinuria.

Moreover, polynucleotides or polypeptides, or agonists or antagonists of the present invention could also be used to modulate hemostatic (the stopping of bleeding) or thrombolytic activity (clot formation). For example, by increasing hemostatic or thrombolytic activity, polynucleotides or polypeptides, or agonists or antagonists of the

present invention could be used to treat blood coagulation disorders (e.g.. afibrinogenemia, factor deficiencies), blood platelet disorders (e.g. thrombocytopenia), or wounds resulting from trauma, surgery, or other causes. Alternatively, polynucleotides or polypeptides, or agonists or antagonists of the present invention that can decrease hemostatic or thrombolytic activity could be used to inhibit or dissolve clotting. These molecules could be important in the treatment of heart attacks (infarction), strokes, or scarring.

Polynucleotides or polypeptides, or agonists or antagonists of the present invention may also be useful in treating or detecting autoimmune disorders. Many autoimmune disorders result from inappropriate recognition of self as foreign material by immune cells. This inappropriate recognition results in an immune response leading to the destruction of the host tissue. Therefore, the administration of polynucleotides or polypeptides, or agonists or antagonists of the present invention that can inhibit an immune response, particularly the proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing autoimmune disorders.

Examples of autoimmune disorders that can be treated or detected include, but are not limited to: Addison's Disease, hemolytic anemia, antiphospholipid syndrome, rheumatoid arthritis, dermatitis, allergic encephalomyelitis, glomerulonephritis, Goodpasture's Syndrome, Graves' Disease, Multiple Sclerosis, Myasthenia Gravis, Neuritis, Ophthalmia, Bullous Pemphigoid, Pemphigus, Polyendocrinopathies, Purpura, Reiter's Disease, Stiff-Man Syndrome, Autoimmune Thyroiditis, Systemic Lupus Erythematosus, Autoimmune Pulmonary Inflammation, Guillain-Barre Syndrome, insulin dependent diabetes mellitis, and autoimmune inflammatory eye disease.

Similarly, allergic reactions and conditions, such as asthma (particularly allergic asthma) or other respiratory problems, may also be treated by polynucleotides or polypeptides, or agonists or antagonists of the present invention. Moreover, these molecules can be used to treat anaphylaxis, hypersensitivity to an antigenic molecule, or blood group incompatibility.

Polynucleotides or polypeptides, or agonists or antagonists of the present invention may also be used to treat and/or prevent organ rejection or graft-versus-host disease (GVHD). Organ rejection occurs by host immune cell destruction of the transplanted tissue through an immune response. Similarly, an immune response is also involved in GVHD, but, in this case, the foreign transplanted immune cells destroy the host tissues. The administration of

polynucleotides or polypeptides, or agonists or antagonists of the present invention that inhibits an immune response, particularly the proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing organ rejection or GVHD.

Similarly, polynucleotides or polypeptides, or agonists or antagonists of the present invention may also be used to modulate inflammation. For example, polynucleotides or polypeptides, or agonists or antagonists of the present invention may inhibit the proliferation and differentiation of cells involved in an inflammatory response. These molecules can be used to treat inflammatory conditions, both chronic and acute conditions, including chronic prostatitis, granulomatous prostatitis and malacoplakia, inflammation associated with infection (e.g., septic shock, sepsis, or systemic inflammatory response syndrome (SIRS)), ischemia-reperfusion injury, endotoxin lethality, arthritis, complement-mediated hyperacute rejection, nephritis, cytokine or chemokine induced lung injury, inflammatory bowel disease, Crohn's disease, or resulting from over production of cytokines (e.g., TNF or IL-1.)

Hyperproliferative Disorders

Polynucleotides or polypeptides, or agonists or antagonists of the present invention can be used to treat or detect hyperproliferative disorders, including neoplasms. Polynucleotides or polypeptides, or agonists or antagonists of the present invention may inhibit the proliferation of the disorder through direct or indirect interactions. Alternatively, Polynucleotides or polypeptides, or agonists or antagonists of the present invention may proliferate other cells which can inhibit the hyperproliferative disorder.

For example, by increasing an immune response, particularly increasing antigenic qualities of the hyperproliferative disorder or by proliferating, differentiating, or mobilizing T-cells, hyperproliferative disorders can be treated. This immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, decreasing an immune response may also be a method of treating hyperproliferative disorders, such as a chemotherapeutic agent.

Examples of hyperproliferative disorders that can be treated or detected by Polynucleotides or polypeptides, or agonists or antagonists of the present invention include, but are not limited to neoplasms located in the: colon, abdomen, bone, breast, digestive system, liver, pancreas, peritoneum, endocrine glands (adrenal, parathyroid, pituitary,

testicles, ovary, thymus, thyroid), eye, head and neck, nervous (central and peripheral), lymphatic system, pelvic, skin, soft tissue, spleen, thoracic, and urogenital.

Similarly, other hyperproliferative disorders can also be treated or detected by polynucleotides or polypeptides, or agonists or antagonists of the present invention. Examples of such hyperproliferative disorders include, but are not limited to: hypergammaglobulinemia, lymphoproliferative disorders, paraproteinemias, purpura, sarcoidosis, Sezary Syndrome, Waldenstron's Macroglobulinemia, Gaucher's Disease, histiocytosis, and any other hyperproliferative disease, besides neoplasia, located in an organ system listed above.

One preferred embodiment utilizes polynucleotides of the present invention to inhibit aberrant cellular division, by gene therapy using the present invention, and/or protein fusions or fragments thereof.

Thus, the present invention provides a method for treating cell proliferative disorders by inserting into an abnormally proliferating cell a polynucleotide of the present invention, wherein said polynucleotide represses said expression.

Another embodiment of the present invention provides a method of treating cell-proliferative disorders in individuals comprising administration of one or more active gene copies of the present invention to an abnormally proliferating cell or cells. In a preferred embodiment, polynucleotides of the present invention is a DNA construct comprising a recombinant expression vector effective in expressing a DNA sequence encoding said polynucleotides. In another preferred embodiment of the present invention, the DNA construct encoding the poynucleotides of the present invention is inserted into cells to be treated utilizing a retrovirus, or more preferrably an adenoviral vector (See G J. Nabel, et. al., PNAS 1999 96: 324-326, which is hereby incorporated by reference). In a most preferred embodiment, the viral vector is defective and will not transform non-proliferating cells, only proliferating cells. Moreover, in a preferred embodiment, the polynucleotides of the present invention inserted into proliferating cells either alone, or in combination with or fused to other polynucleotides, can then be modulated via an external stimulus (i.e. magnetic, specific small molecule, chemical, or drug administration, etc.), which acts upon the promoter upstream of said polynucleotides to induce expression of the encoded protein product. As such the beneficial therapeutic affect of the present invention may be expressly modulated

(i.e. to increase. decrease, or inhibit expression of the present invention) based upon said external stimulus.

Polynucleotides of the present invention may be useful in repressing expression of oncogenic genes or antigens. By "repressing expression of the oncogenic genes " is intended the suppression of the transcription of the gene, the degradation of the gene transcript (pre-message RNA), the inhibition of splicing, the destruction of the messenger RNA, the prevention of the post-translational modifications of the protein. the destruction of the protein. or the inhibition of the normal function of the protein.

For local administration to abnormally proliferating cells, polynucleotides of the present invention may be administered by any method known to those of skill in the art including, but not limited to transfection. electroporation, microinjection of cells, or in vehicles such as liposomes, lipofectin, or as naked polynucleotides, or any other method described throughout the specification. The polynucleotide of the present invention may be delivered by known gene delivery systems such as, but not limited to, retroviral vectors (Gilboa, J. Virology 44:845 (1982); Hocke, Nature 320:275 (1986); Wilson, et al., Proc. Natl. Acad. Sci. U.S.A. 85:3014), vaccinia virus system (Chakrabarty et al., Mol. Cell Biol. 5:3403 (1985) or other efficient DNA delivery systems (Yates et al., Nature 313:812 (1985)) known to those skilled in the art. These references are exemplary only and are hereby incorporated by reference. In order to specifically deliver or transfect cells which are abnormally proliferating and spare non-dividing cells, it is preferable to utilize a retrovirus, or adenoviral (as described in the art and elsewhere herein) delivery system known to those of skill in the art. Since host DNA replication is required for retroviral DNA to integrate and the retrovirus will be unable to self replicate due to the lack of the retrovirus genes needed for its life cycle. Utilizing such a retroviral delivery system for polynucleotides of the present invention will target said gene and constructs to abnormally proliferating cells and will spare the non-dividing normal cells.

The polynucleotides of the present invention may be delivered directly to cell proliferative disorder/disease sites in internal organs, body cavities and the like by use of imaging devices used to guide an injecting needle directly to the disease site. The polynucleotides of the present invention may also be administered to disease sites at the time of surgical intervention.

By "cell proliferative disease" is meant any human or animal disease or disorder, affecting any one or any combination of organs, cavities, or body parts, which is characterized by single or multiple local abnormal proliferations of cells, groups of cells, or tissues, whether benign or malignant.

Any amount of the polynucleotides of the present invention may be administered as long as it has a biologically inhibiting effect on the proliferation of the treated cells. Moreover, it is possible to administer more than one of the polynucleotide of the present invention simultaneously to the same site. By "biologically inhibiting" is meant partial or total growth inhibition as well as decreases in the rate of proliferation or growth of the cells. The biologically inhibitory dose may be determined by assessing the effects of the polynucleotides of the present invention on target malignant or abnormally proliferating cell growth in tissue culture, tumor growth in animals and cell cultures. or any other method known to one of ordinary skill in the art.

The present invention is further directed to antibody-based therapies which involve administering of anti-polypeptides and anti-polynucleotide antibodies to a mammalian, preferably human, patient for treating one or more of the described disorders. Methods for producing anti-polypeptides and anti-polynucleotide antibodies polyclonal and monoclonal antibodies are described in detail elsewhere herein. Such antibodies may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g. as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

In particular, the antibodies, fragments and derivatives of the present invention are useful for treating a subject having or developing cell proliferative and/or differentiation disorders as described herein. Such treatment comprises administering a single or multiple doses of the antibody, or a fragment. derivative. or a conjugate thereof.

The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or hematopoietic growth

factors. for example., which serve to increase the number or activity of effector cells which interact with the antibodies.

It is preferred to use high affinity and/or potent in vivo inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention. fragments or regions thereof, for both immunoassays directed to and therapy of disorders related to polynucleotides or polypeptides, including fragements thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides, including fragements thereof. Preferred binding affinities include those with a dissociation constant or Kd less than $5X10^{-6}M$, $10^{-6}M$, $5X10^{-7}M$, $10^{-7}M$, $5X10^{-8}M$, $10^{-8}M$, $5X10^{-9}M$, $10^{-9}M$, $5X10^{-10}M$, $10^{-10}M$, $5X10^{-11}M$, $10^{-11}M$, $5X10^{-12}M$, $10^{-12}M$, $5X10^{-13}M$, $10^{-13}M$, $5X10^{-14}M$, $10^{-14}M$, $5X10^{-15}M$, and $10^{-15}M$.

Moreover, polypeptides of the present invention are useful in inhibiting the angiogenesis of proliferative cells or tissues, either alone, as a protein fusion, or in combination with other polypeptides directly or indirectly, as described elsewhere herein. In a most preferred embodiment, said anti-angiogenesis effect may be achieved indirectly, for example, through the inhibition of hematopoietic, tumor-specific cells, such as tumor-associated macrophages (See Joseph IB, et al. J Natl Cancer Inst, 90(21):1648-53 (1998), which is hereby incorporated by reference). Antibodies directed to polypeptides or polynucleotides of the present invention may also result in inhibition of angiogenesis directly, or indirectly (See Witte L, et al., Cancer Metastasis Rev. 17(2):155-61 (1998), which is hereby incorporated by reference)).

Polypeptides, including protein fusions, of the present invention, or fragments thereof may be useful in inhibiting proliferative cells or tissues through the induction of apoptosis. Said polypeptides may act either directly, or indirectly to induce apoptosis of proliferative cells and tissues, for example in the activation of a death-domain receptor, such as tumor necrosis factor (TNF) receptor-1, CD95 (Fas/APO-1), TNF-receptor-related apoptosis-mediated protein (TRAMP) and TNF-related apoptosis-inducing ligand (TRAIL) receptor-1 and -2 (See Schulze-Osthoff K, et.al., Eur J Biochem 254(3):439-59 (1998), which is hereby incorporated by reference). Moreover, in another preferred embodiment of the present invention. said polypeptides may induce apoptosis through other mechanisms, such as in the activation of other proteins which will activate apoptosis, or through stimulating the expression of said proteins, either alone or in combination with small molecule drugs or

adjuviants, such as apoptonin, galectins, thioredoxins, antiinflammatory proteins (See for example, Mutat Res 400(1-2):447-55 (1998), Med Hypotheses.50(5):423-33 (1998), Chem Biol Interact. Apr 24;111-112:23-34 (1998), J Mol Med.76(6):402-12 (1998), Int J Tissue React;20(1):3-15 (1998), which are all hereby incorporated by reference).

Polypeptides, including protein fusions to. or fragments thereof. of the present invention are useful in inhibiting the metastasis of proliferative cells or tissues. Inhibition may occur as a direct result of administering polypeptides, or antibodies directed to said polypeptides as described elsewere herein. or indirectly, such as activating the expression of proteins known to inhibit metastasis, for example alpha 4 integrins, (See, e.g., Curr Top Microbiol Immunol 1998;231:125-41, which is hereby incorporated by reference). Such thereapeutic affects of the present invention may be achieved either alone. or in combination with small molecule drugs or adjuvants.

In another embodiment, the invention provides a method of delivering compositions containing the polypeptides of the invention (e.g., compositions containing polypeptides or polypeptide antibodes associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs) to targeted cells expressing the polypeptide of the present invention. Polypeptides or polypeptide antibodes of the invention may be associated with with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions. Polypeptides, protein fusions to, or fragments thereof, of the present invention are useful in enhancing the immunogenicity and/or antigenicity of proliferating cells or tissues, either directly, such as would occur if the polypeptides of the present invention 'vaccinated' the immune response to respond to proliferative antigens and immunogens, or indirectly, such as in activating the expression of proteins known to enhance the immune response (e.g. chemokines), to said antigens and immunogens.

Cardiovascular Disorders

Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to treat cardiovascular disorders, including peripheral artery disease, such as limb ischemia.

Cardiovascular disorders include cardiovascular abnormalities, such as arterio-arterial fistula, arteriovenous fistula, cerebral arteriovenous malformations, congenital heart defects,

pulmonary atresia, and Scimitar Syndrome. Congenital heart defects include aortic coarctation, cor triatriatum, coronary vessel anomalies, crisscross heart, dextrocardia, patent ductus arteriosus, Ebstein's anomaly, Eisenmenger complex, hypoplastic left heart syndrome, levocardia, tetralogy of fallot, transposition of great vessels, double outlet right ventricle, tricuspid atresia, persistent truncus arteriosus, and heart septal defects, such as aortopulmonary septal defect, endocardial cushion defects, Lutembacher's Syndrome, trilogy of Fallot, ventricular heart septal defects.

Cardiovascular disorders also include heart disease, such as arrhythmias, carcinoid heart disease, high cardiac output, low cardiac output, cardiac tamponade, endocarditis (including bacterial), heart aneurysm, cardiac arrest, congestive heart failure, congestive cardiomyopathy, paroxysmal dyspnea, cardiac edema, heart hypertrophy, congestive cardiomyopathy, left ventricular hypertrophy, right ventricular hypertrophy, post-infarction heart rupture, ventricular septal rupture, heart valve diseases, myocardial diseases, myocardial ischemia, pericardial effusion, pericarditis (including constrictive and tuberculous), pneumopericardium, postpericardiotomy syndrome, pulmonary heart disease, rheumatic heart disease, ventricular dysfunction, hyperemia, cardiovascular pregnancy complications, Scimitar Syndrome, cardiovascular syphilis, and cardiovascular tuberculosis.

Arrhythmias include sinus arrhythmia, atrial fibrillation, atrial flutter, bradycardia, extrasystole, Adams-Stokes Syndrome, bundle-branch block, sinoatrial block, long QT syndrome, parasystole, Lown-Ganong-Levine Syndrome, Mahaim-type pre-excitation syndrome, Wolff-Parkinson-White syndrome, sick sinus syndrome, tachycardias, and ventricular fibrillation. Tachycardias include paroxysmal tachycardia, supraventricular tachycardia, accelerated idioventricular rhythm, atrioventricular nodal reentry tachycardia, ectopic atrial tachycardia, ectopic junctional tachycardia, sinoatrial nodal reentry tachycardia, sinus tachycardia, Torsades de Pointes, and ventricular tachycardia.

Heart valve disease include aortic valve insufficiency, aortic valve stenosis, hear murmurs, aortic valve prolapse, mitral valve prolapse, tricuspid valve prolapse, mitral valve insufficiency, mitral valve stenosis, pulmonary atresia, pulmonary valve insufficiency, pulmonary valve stenosis, tricuspid atresia, tricuspid valve insufficiency, and tricuspid valve stenosis.

Myocardial diseases include alcoholic cardiomyopathy, congestive cardiomyopathy, hypertrophic cardiomyopathy, aortic subvalvular stenosis, pulmonary subvalvular stenosis,

restrictive cardiomyopathy, Chagas cardiomyopathy, endocardial fibroelastosis, endomyocardial fibrosis, Kearns Syndrome. myocardial reperfusion injury, and myocarditis.

Myocardial ischemias include coronary disease, such as angina pectoris, coronary aneurysm. coronary arteriosclerosis, coronary thrombosis, coronary vasospasm, myocardial infarction and myocardial stunning.

Cardiovascular diseases also include vascular diseases such as aneurysms, angiodysplasia, angiomatosis, bacillary angiomatosis, Hippel-Lindau Disease, Klippel-Trenaunay-Weber Syndrome, Sturge-Weber Syndrome, angioneurotic edema, aortic diseases, Takayasu's Arteritis, aortitis. Leriche's Syndrome, arterial occlusive diseases, arteritis, enarteritis. polyarteritis nodosa, cerebrovascular disorders, diabetic angiopathies, diabetic retinopathy. embolisms, thrombosis, erythromelalgia, hemorrhoids. hepatic veno-occlusive disease. hypertension, hypotension. ischemia. peripheral vascular diseases. phlebitis, pulmonary veno-occlusive disease, Raynaud's disease, CREST syndrome, retinal vein occlusion. Scimitar syndrome, superior vena cava syndrome, telangiectasia, atacia telangiectasia, hereditary hemorrhagic telangiectasia, varicocele, varicose veins, varicose ulcer, vasculitis, and venous insufficiency.

Aneurysms include dissecting aneurysms, false aneurysms, infected aneurysms, ruptured aneurysms, aortic aneurysms, cerebral aneurysms, coronary aneurysms, heart aneurysms, and iliac aneurysms.

Arterial occlusive diseases include arteriosclerosis. intermittent claudication, carotid stenosis, fibromuscular dysplasias, mesenteric vascular occlusion, Moyamoya disease, renal artery obstruction, retinal artery occlusion, and thromboangiitis obliterans.

Cerebrovascular disorders include carotid artery diseases, cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformation, cerebral artery diseases, cerebral embolism and thrombosis, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, cerebral hemorrhage, epidural hematoma, subdural hematoma, subaraxhnoid hemorrhage, cerebral infarction, cerebral ischemia (including transient), subclavian steal syndrome, periventricular leukomalacia, vascular headache, cluster headache, migraine, and vertebrobasilar insufficiency.

Embolisms include air embolisms, amniotic fluid embolisms, cholesterol embolisms, blue toe syndrome, fat embolisms, pulmonary embolisms, and thromoboembolisms.

Thrombosis include coronary thrombosis, hepatic vein thrombosis, retinal vein occlusion, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, and thrombophlebitis.

Ischemia includes cerebral ischemia, ischemic colitis, compartment syndromes, anterior compartment syndrome, myocardial ischemia, reperfusion injuries, and peripheral limb ischemia. Vasculitis includes aortitis, arteritis, Behcet's Syndrome, Churg-Strauss Syndrome, mucocutaneous lymph node syndrome, thromboangiitis obliterans, hypersensitivity vasculitis, Schoenlein-Henoch purpura, allergic cutaneous vasculitis, and Wegener's granulomatosis.

Polynucleotides or polypeptides, or agonists or antagonists of the present invention, are especially effective for the treatment of critical limb ischemia and coronary disease.

Polypeptides may be administered using any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, biolistic injectors, particle accelerators, gelfoam sponge depots, other commercially available depot materials, osmotic pumps, oral or suppositorial solid pharmaceutical formulations, decanting or topical applications during surgery, aerosol delivery. Such methods are known in the art. Polypeptides may be administered as part of a Therapeutic, described in more detail below. Methods of delivering polynucleotides are described in more detail herein.

Anti-Angiogenesis Activity

The naturally occurring balance between endogenous stimulators and inhibitors of angiogenesis is one in which inhibitory influences predominate. Rastinejad *et al.*, *Cell* *56*:345-355 (1989). In those rare instances in which neovascularization occurs under normal physiological conditions, such as wound healing, organ regeneration, embryonic development, and female reproductive processes, angiogenesis is stringently regulated and spatially and temporally delimited. Under conditions of pathological angiogenesis such as that characterizing solid tumor growth, these regulatory controls fail. Unregulated angiogenesis becomes pathologic and sustains progression of many neoplastic and non-neoplastic diseases. A number of serious diseases are dominated by abnormal neovascularization including solid tumor growth and metastases, arthritis, some types of eye disorders, and psoriasis. See, e.g., reviews by Moses *et al.*, *Biotech.* *9*:630-634 (1991); Folkman *et al.*, *N. Engl. J. Med.*, *333*:1757-1763 (1995); Auerbach *et al.*, *J. Microvasc. Res.*

29:401-411 (1985); Folkman, Advances in Cancer Research, eds. Klein and Weinhouse, Academic Press. New York, pp. 175-203 (1985); Patz, *Am. J. Opthalmol. 94*:715-743 (1982); and Folkman *et al.*, Science *221*:719-725 (1983). In a number of pathological conditions, the process of angiogenesis contributes to the disease state. For example, significant data have accumulated which suggest that the growth of solid tumors is dependent on angiogenesis. Folkman and Klagsbrun, *Science 235*:442-447 (1987).

The polynucleotides encoding a polypeptide of the present invention may be administered along with other polynucleotides encoding an angiogenic protein. Examples of angiogenic proteins include, but are not limited to, acidic and basic fibroblast growth factors, VEGF-1, VEGF-2, VEGF-3, epidermal growth factor alpha and beta, platelet-derived endothelial cell growth factor, platelet-derived growth factor, tumor necrosis factor alpha, hepatocyte growth factor, insulin like growth factor, colony stimulating factor, macrophage colony stimulating factor, granulocyte/macrophage colony stimulating factor, and nitric oxide synthase.

The present invention provides for treatment of diseases or disorders associated with neovascularization by administration of the polynucleotides and/or polypeptides of the invention, as well as agonists or antagonists of the present invention. Malignant and metastatic conditions which can be treated with the polynucleotides and polypeptides, or agonists or antagonists of the invention include, but are not limited to, malignancies, solid tumors, and cancers described herein and otherwise known in the art (for a review of such disorders, see Fishman *et al.*, Medicine, 2d Ed., J. B. Lippincott Co., Philadelphia (1985)).Thus, the present invention provides a method of treating an angiogenesis-related disease and/or disorder, comprising administering to an individual in need thereof a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist of the invention. For example, polynucleotides, polypeptides, antagonists and/or agonists may be utilized in a variety of additional methods in order to therapeutically treat a cancer or tumor. Cancers which may be treated with polynucleotides, polypeptides, antagonists and/or agonists include, but are not limited to solid tumors, including colon, rectum, prostate, lung, breast, ovarian, stomach, pancreas, larynx, esophagus, testes, liver, parotid, biliary tract, cervix, uterus, endometrium, kidney, bladder, thyroid cancer; primary tumors and metastases; melanomas; glioblastoma; Kaposi's sarcoma; leiomyosarcoma; non- small cell lung cancer; colorectal cancer; advanced malignancies; and blood born tumors such as leukemias. For

example, polynucleotides, polypeptides, antagonists and/or agonists may be delivered topically, in order to treat cancers such as skin cancer, head and neck tumors, breast tumors, and Kaposi's sarcoma.

Within yet other aspects, polynucleotides, polypeptides, antagonists and/or agonists may be utilized to treat superficial forms of bladder cancer by, for example, intravesical administration. Polynucleotides, polypeptides, antagonists and/or agonists may be delivered directly into the tumor, or near the tumor site, via injection or a catheter. Of course, as the artisan of ordinary skill will appreciate, the appropriate mode of administration will vary according to the cancer to be treated. Other modes of delivery are discussed herein.

Polynucleotides, polypeptides, antagonists and/or agonists may be useful in treating other disorders, besides cancers, which involve angiogenesis. These disorders include, but are not limited to: benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; artheroscleric plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uvietis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia; hemophiliac joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis.

For example, within one aspect of the present invention methods are provided for treating hypertrophic scars and keloids, comprising the step of administering a polynucleotide, polypeptide, antagonist and/or agonist of the invention to a hypertrophic scar or keloid.

Within one embodiment of the present invention polynucleotides, polypeptides, antagonists and/or agonists are directly injected into a hypertrophic scar or keloid, in order to prevent the progression of these lesions. This therapy is of particular value in the prophylactic treatment of conditions which are known to result in the development of hypertrophic scars and keloids (e.g., burns), and is preferably initiated after the proliferative phase has had time to progress (approximately 14 days after the initial injury), but before

hypertrophic scar or keloid development. As noted above, the present invention also provides methods for treating neovascular diseases of the eye, including for example, corneal neovascularization, neovascular glaucoma, proliferative diabetic retinopathy, retrolental fibroplasia and macular degeneration.

Moreover, Ocular disorders associated with neovascularization which can be treated with the polynucleotides and polypeptides of the present invention (including agonists and/or antagonists) include, but are not limited to: neovascular glaucoma, diabetic retinopathy, retinoblastoma, retrolental fibroplasia, uveitis, retinopathy of prematurity macular degeneration, corneal graft neovascularization, as well as other eye inflammatory diseases, ocular tumors and diseases associated with choroidal or iris neovascularization. See, e.g., reviews by Waltman *et al.*, *Am. J. Ophthal.* *85*:704-710 (1978) and Gartner *et al.*, *Surv. Ophthal.* *22*:291-312 (1978).

Thus, within one aspect of the present invention methods are provided for treating neovascular diseases of the eye such as corneal neovascularization (including corneal graft neovascularization), comprising the step of administering to a patient a therapeutically effective amount of a compound (as described above) to the cornea, such that the formation of blood vessels is inhibited. Briefly, the cornea is a tissue which normally lacks blood vessels. In certain pathological conditions however, capillaries may extend into the cornea from the pericorneal vascular plexus of the limbus. When the cornea becomes vascularized, it also becomes clouded, resulting in a decline in the patient's visual acuity. Visual loss may become complete if the cornea completely opacitates. A wide variety of disorders can result in corneal neovascularization, including for example, corneal infections (e.g., trachoma, herpes simplex keratitis, leishmaniasis and onchocerciasis), immunological processes (e.g., graft rejection and Stevens-Johnson's syndrome), alkali burns, trauma, inflammation (of any cause), toxic and nutritional deficiency states, and as a complication of wearing contact lenses.

Within particularly preferred embodiments of the invention, may be prepared for topical administration in saline (combined with any of the preservatives and antimicrobial agents commonly used in ocular preparations), and administered in eyedrop form. The solution or suspension may be prepared in its pure form and administered several times daily. Alternatively, anti-angiogenic compositions, prepared as described above, may also be administered directly to the cornea. Within preferred embodiments, the anti-angiogenic

composition is prepared with a muco-adhesive polymer which binds to cornea. Within further embodiments, the anti-angiogenic factors or anti-angiogenic compositions may be utilized as an adjunct to conventional steroid therapy. Topical therapy may also be useful prophylactically in corneal lesions which are known to have a high probability of inducing an angiogenic response (such as chemical burns). In these instances the treatment, likely in combination with steroids, may be instituted immediately to help prevent subsequent complications.

Within other embodiments, the compounds described above may be injected directly into the corneal stroma by an ophthalmologist under microscopic guidance. The preferred site of injection may vary with the morphology of the individual lesion, but the goal of the administration would be to place the composition at the advancing front of the vasculature (i.e., interspersed between the blood vessels and the normal cornea). In most cases this would involve perilimbic corneal injection to "protect" the cornea from the advancing blood vessels. This method may also be utilized shortly after a corneal insult in order to prophylactically prevent corneal neovascularization. In this situation the material could be injected in the perilimbic cornea interspersed between the corneal lesion and its undesired potential limbic blood supply. Such methods may also be utilized in a similar fashion to prevent capillary invasion of transplanted corneas. In a sustained-release form injections might only be required 2-3 times per year. A steroid could also be added to the injection solution to reduce inflammation resulting from the injection itself.

Within another aspect of the present invention, methods are provided for treating neovascular glaucoma, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eye, such that the formation of blood vessels is inhibited. In one embodiment, the compound may be administered topically to the eye in order to treat early forms of neovascular glaucoma. Within other embodiments, the compound may be implanted by injection into the region of the anterior chamber angle. Within other embodiments, the compound may also be placed in any location such that the compound is continuously released into the aqueous humor. Within another aspect of the present invention, methods are provided for treating proliferative diabetic retinopathy, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eyes, such that the formation of blood vessels is inhibited.

Within particularly preferred embodiments of the invention, proliferative diabetic retinopathy may be treated by injection into the aqueous humor or the vitreous, in order to increase the local concentration of the polynucleotide, polypeptide, antagonist and/or agonist in the retina. Preferably, this treatment should be initiated prior to the acquisition of severe disease requiring photocoagulation.

Within another aspect of the present invention, methods are provided for treating retrolental fibroplasia, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eye, such that the formation of blood vessels is inhibited. The compound may be administered topically, via intravitreous injection and/or via intraocular implants.

Additionally, disorders which can be treated with the polynucleotides, polypeptides, agonists and/or agonists include, but are not limited to, hemangioma, arthritis, psoriasis, angiofibroma, atherosclerotic plaques, delayed wound healing, granulations, hemophilic joints, hypertrophic scars, nonunion fractures, Osler-Weber syndrome, pyogenic granuloma, scleroderma, trachoma, and vascular adhesions.

Moreover, disorders and/or states, which can be treated with be treated with the the polynucleotides, polypeptides, agonists and/or agonists include, but are not limited to, solid tumors, blood born tumors such as leukemias, tumor metastasis, Kaposi's sarcoma, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas, rheumatoid arthritis, psoriasis, ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, and uvietis, delayed wound healing, endometriosis, vascluogenesis, granulations, hypertrophic scars (keloids), nonunion fractures, scleroderma, trachoma, vascular adhesions, myocardial angiogenesis, coronary collaterals, cerebral collaterals, arteriovenous malformations, ischemic limb angiogenesis, Osler-Webber Syndrome, plaque neovascularization, telangiectasia, hemophiliac joints, angiofibroma fibromuscular dysplasia, wound granulation, Crohn's disease, atherosclerosis, birth control agent by preventing vascularization required for embryo implantation controlling menstruation, diseases that have angiogenesis as a pathologic consequence such as cat scratch disease (Rochele minalia quintosa), ulcers (Helicobacter pylori), Bartonellosis and bacillary angiomatosis.

In one aspect of the birth control method. an amount of the compound sufficient to block embryo implantation is administered before or after intercourse and fertilization have occurred, thus providing an effective method of birth control, possibly a "morning after" method. Polynucleotides, polypeptides, agonists and/or agonists may also be used in controlling menstruation or administered as either a peritoneal lavage fluid or for peritoneal implantation in the treatment of endometriosis.

Polynucleotides, polypeptides, agonists and/or agonists of the present invention may be incorporated into surgical sutures in order to prevent stitch granulomas.

Polynucleotides, polypeptides, agonists and/or agonists may be utilized in a wide variety of surgical procedures. For example, within one aspect of the present invention a compositions (in the form of. for example, a spray or film) may be utilized to coat or spray an area prior to removal of a tumor, in order to isolate normal surrounding tissues from malignant tissue, and/or to prevent the spread of disease to surrounding tissues. Within other aspects of the present invention, compositions (e.g., in the form of a spray) may be delivered via endoscopic procedures in order to coat tumors, or inhibit angiogenesis in a desired locale. Within yet other aspects of the present invention, surgical meshes which have been coated with anti- angiogenic compositions of the present invention may be utilized in any procedure wherein a surgical mesh might be utilized. For example, within one embodiment of the invention a surgical mesh laden with an anti-angiogenic composition may be utilized during abdominal cancer resection surgery (e.g., subsequent to colon resection) in order to provide support to the structure, and to release an amount of the anti-angiogenic factor.

Within further aspects of the present invention, methods are provided for treating tumor excision sites, comprising administering a polynucleotide, polypeptide, agonist and/or agonist to the resection margins of a tumor subsequent to excision, such that the local recurrence of cancer and the formation of new blood vessels at the site is inhibited. Within one embodiment of the invention, the anti-angiogenic compound is administered directly to the tumor excision site (e.g., applied by swabbing, brushing or otherwise coating the resection margins of the tumor with the anti-angiogenic compound). Alternatively, the anti-angiogenic compounds may be incorporated into known surgical pastes prior to administration. Within particularly preferred embodiments of the invention. the anti-angiogenic compounds are applied after hepatic resections for malignancy, and after neurosurgical operations.

Within one aspect of the present invention, polynucleotides, polypeptides, agonists and/or agonists may be administered to the resection margin of a wide variety of tumors, including for example, breast, colon, brain and hepatic tumors. For example, within one embodiment of the invention, anti-angiogenic compounds may be administered to the site of a neurological tumor subsequent to excision, such that the formation of new blood vessels at the site are inhibited.

The polynucleotides, polypeptides, agonists and/or agonists of the present invention may also be administered along with other anti-angiogenic factors. Representative examples of other anti-angiogenic factors include: Anti-Invasive Factor, retinoic acid and derivatives thereof, paclitaxel, Suramin, Tissue Inhibitor of Metalloproteinase-1, Tissue Inhibitor of Metalloproteinase-2, Plasminogen Activator Inhibitor-1, Plasminogen Activator Inhibitor-2, and various forms of the lighter "d group" transition metals.

Lighter "d group" transition metals include, for example, vanadium, molybdenum, tungsten, titanium, niobium, and tantalum species. Such transition metal species may form transition metal complexes. Suitable complexes of the above-mentioned transition metal species include oxo transition metal complexes.

Representative examples of vanadium complexes include oxo vanadium complexes such as vanadate and vanadyl complexes. Suitable vanadate complexes include metavanadate and orthovanadate complexes such as, for example, ammonium metavanadate, sodium metavanadate, and sodium orthovanadate. Suitable vanadyl complexes include, for example, vanadyl acetylacetonate and vanadyl sulfate including vanadyl sulfate hydrates such as vanadyl sulfate mono- and trihydrates.

Representative examples of tungsten and molybdenum complexes also include oxo complexes. Suitable oxo tungsten complexes include tungstate and tungsten oxide complexes. Suitable tungstate complexes include ammonium tungstate, calcium tungstate, sodium tungstate dihydrate, and tungstic acid. Suitable tungsten oxides include tungsten (IV) oxide and tungsten (VI) oxide. Suitable oxo molybdenum complexes include molybdate, molybdenum oxide, and molybdenyl complexes. Suitable molybdate complexes include ammonium molybdate and its hydrates, sodium molybdate and its hydrates, and potassium molybdate and its hydrates. Suitable molybdenum oxides include molybdenum (VI) oxide, molybdenum (VI) oxide, and molybdic acid. Suitable molybdenyl complexes include, for

example. molybdenyl acetylacetonate. Other suitable tungsten and molybdenum complexes include hydroxo derivatives derived from. for example, glycerol. tartaric acid, and sugars.

A wide variety of other anti-angiogenic factors may also be utilized within the context of the present invention. Representative examples include platelet factor 4; protamine sulphate: sulphated chitin derivatives (prepared from queen crab shells), (Murata et al., Cancer Res. 51:22-26, 1991); Sulphated Polysaccharide Peptidoglycan Complex (SP- PG) (the function of this compound may be enhanced by the presence of steroids such as estrogen, and tamoxifen citrate); Staurosporine; modulators of matrix metabolism, including for example, proline analogs, cishydroxyproline, d,L-3,4-dehydroproline, Thiaproline, alpha,alpha-dipyridyl, aminopropionitrile fumarate; 4-propyl-5-(4-pyridinyl)-2(3H)-oxazolone; Methotrexate; Mitoxantrone; Heparin; Interferons; 2 Macroglobulin-serum; ChIMP-3 (Pavloff et al., J. Bio. Chem. 267:17321-17326, 1992); Chymostatin (Tomkinson et al., Biochem J. 286:475-480, 1992); Cyclodextrin Tetradecasulfate; Eponemycin; Camptothecin; Fumagillin (Ingber et al., Nature 348:555-557, 1990); Gold Sodium Thiomalate ("GST"); Matsubara and Ziff, J. Clin. Invest. 79:1440-1446, 1987); anticollagenase-serum; alpha2-antiplasmin (Holmes et al., J. Biol. Chem. 262(4):1659-1664, 1987); Bisantrene (National Cancer Institute); Lobenzarit disodium (N-(2)-carboxyphenyl-4-chloroanthronilic acid disodium or "CCA"; Takeuchi et al., Agents Actions 36:312-316, 1992); Thalidomide; Angostatic steroid; AGM-1470; carboxynaminolmidazole; and metalloproteinase inhibitors such as BB94.

Diseases at the Cellular Level

Diseases associated with increased cell survival or the inhibition of apoptosis that could be treated or detected by polynucleotides or polypeptides, as well as antagonists or agonists of the present invention, include cancers (such as follicular lymphomas, carcinomas with p53 mutations, and hormone-dependent tumors, including, but not limited to colon cancer, cardiac tumors, pancreatic cancer, melanoma, retinoblastoma, glioblastoma, lung cancer, intestinal cancer, testicular cancer, stomach cancer, neuroblastoma, myxoma, myoma, lymphoma, endothelioma, osteoblastoma, osteoclastoma, osteosarcoma, chondrosarcoma, adenoma. breast cancer, prostate cancer, Kaposi's sarcoma and ovarian cancer); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and

immune-related glomerulonephritis and rheumatoid arthritis) and viral infections (such as herpes viruses, pox viruses and adenoviruses), inflammation, graft v. host disease, acute graft rejection, and chronic graft rejection. In preferred embodiments. polynucleotides, polypeptides, and/or antagonists of the invention are used to inhibit growth, progression, and/or metasis of cancers, in particular those listed above.

Additional diseases or conditions associated with increased cell survival that could be treated or detected by polynucleotides or polypeptides, or agonists or antagonists of the present invention include, but are not limited to, progression, and/or metastases of malignancies and related disorders such as leukemia (including acute leukemias (e.g., acute lymphocytic leukemia, acute myelocytic leukemia (including myeloblastic, promyelocytic, myelomonocytic, monocytic, and erythroleukemia)) and chronic leukemias (e.g., chronic myelocytic (granulocytic) leukemia and chronic lymphocytic leukemia)), polycythemia vera, lymphomas (e.g., Hodgkin's disease and non-Hodgkin's disease), multiple myeloma, Waldenstrom's macroglobulinemia, heavy chain disease, and solid tumors including, but not limited to, sarcomas and carcinomas such as fibrosarcoma, myxosarcoma, liposarcoma, chondrosarcoma, osteogenic sarcoma, chordoma, angiosarcoma, endotheliosarcoma, lymphangiosarcoma, lymphangioendotheliosarcoma, synovioma, mesothelioma, Ewing's tumor, leiomyosarcoma, rhabdomyosarcoma, colon carcinoma, pancreatic cancer, breast cancer, ovarian cancer, prostate cancer, squamous cell carcinoma, basal cell carcinoma, adenocarcinoma, sweat gland carcinoma, sebaceous gland carcinoma, papillary carcinoma, papillary adenocarcinomas, cystadenocarcinoma, medullary carcinoma, bronchogenic carcinoma, renal cell carcinoma, hepatoma, bile duct carcinoma, choriocarcinoma, seminoma, embryonal carcinoma, Wilm's tumor, cervical cancer, testicular tumor, lung carcinoma, small cell lung carcinoma, bladder carcinoma, epithelial carcinoma, glioma, astrocytoma, medulloblastoma, craniopharyngioma, ependymoma, pinealoma, hemangioblastoma, acoustic neuroma, oligodendroglioma, menangioma, melanoma, neuroblastoma, and retinoblastoma.

Diseases associated with increased apoptosis that could be treated or detected by polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, include AIDS; neurodegenerative disorders (such as Alzheimer's disease, Parkinson's disease, Amyotrophic lateral sclerosis, Retinitis pigmentosa, Cerebellar degeneration and brain tumor or prior associated disease); autoimmune disorders (such as, multiple sclerosis, Sjogren's

syndrome. Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) myelodysplastic syndromes (such as aplastic anemia), graft v. host disease, ischemic injury (such as that caused by myocardial infarction, stroke and reperfusion injury), liver injury (e.g., hepatitis related liver injury, ischemia/reperfusion injury, cholestosis (bile duct injury) and liver cancer); toxin-induced liver disease (such as that caused by alcohol), septic shock, cachexia and anorexia.

Wound Healing and Epithelial Cell Proliferation

In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to stimulate epithelial cell proliferation and basal keratinocytes for the purpose of wound healing, and to stimulate hair follicle production and healing of dermal wounds. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may be clinically useful in stimulating wound healing including surgical wounds, excisional wounds, deep wounds involving damage of the dermis and epidermis, eye tissue wounds, dental tissue wounds, oral cavity wounds, diabetic ulcers, dermal ulcers, cubitus ulcers, arterial ulcers, venous stasis ulcers, burns resulting from heat exposure or chemicals, and other abnormal wound healing conditions such as uremia, malnutrition, vitamin deficiencies and complications associted with systemic treatment with steroids, radiation therapy and antineoplastic drugs and antimetabolites. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote dermal reestablishment subsequent to dermal loss

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to increase the adherence of skin grafts to a wound bed and to stimulate re-epithelialization from the wound bed. The following are types of grafts that polynucleotides or polypeptides, agonists or antagonists of the present invention, could be used to increase adherence to a wound bed: autografts, artificial skin, allografts, autodermic graft, autoepdermic grafts, avacular grafts, Blair-Brown grafts, bone graft, brephoplastic grafts, cutis graft, delayed graft, dermic graft, epidermic graft, fascia graft, full thickness graft, heterologous graft, xenograft, homologous graft, hyperplastic graft, lamellar graft,

mesh graft, mucosal graft, Ollier-Thiersch graft, omenpal graft, patch graft, pedicle graft, penetrating graft, split skin graft, thick split graft. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, can be used to promote skin strength and to improve the appearance of aged skin.

It is believed that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, will also produce changes in hepatocyte proliferation, and epithelial cell proliferation in the lung, breast, pancreas, stomach, small intesting, and large intestine. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could promote proliferation of epithelial cells such as sebocytes, hair follicles, hepatocytes, type II pneumocytes, mucin-producing goblet cells, and other epithelial cells and their progenitors contained within the skin, lung, liver, and gastrointestinal tract. Polynucleotides or polypeptides, agonists or antagonists of the present invention, may promote proliferation of endothelial cells, keratinocytes, and basal keratinocytes.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to reduce the side effects of gut toxicity that result from radiation, chemotherapy treatments or viral infections. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may have a cytoprotective effect on the small intestine mucosa. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may also stimulate healing of mucositis (mouth ulcers) that result from chemotherapy and viral infections.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could further be used in full regeneration of skin in full and partial thickness skin defects, including burns, (i.e., repopulation of hair follicles, sweat glands, and sebaceous glands), treatment of other skin defects such as psoriasis. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat epidermolysis bullosa, a defect in adherence of the epidermis to the underlying dermis which results in frequent, open and painful blisters by accelerating reepithelialization of these lesions. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to treat gastric and doudenal ulcers and help heal by scar formation of the mucosal lining and regeneration of glandular mucosa and duodenal mucosal lining more rapidly. Inflamamatory bowel diseases, such as Crohn's disease and ulcerative colitis, are diseases which result in destruction of the mucosal surface of the small or large intestine,

respectively. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote the resurfacing of the mucosal surface to aid more rapid healing and to prevent progression of inflammatory bowel disease. Treatment with polynucleotides or polypeptides, agonists or antagonists of the present invention, is expected to have a significant effect on the production of mucus throughout the gastrointestinal tract and could be used to protect the intestinal mucosa from injurious substances that are ingested or following surgery. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat diseases associate with the under expression.

Moreover, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to prevent and heal damage to the lungs due to various pathological states. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, which could stimulate proliferation and differentiation and promote the repair of alveoli and brochiolar epithelium to prevent or treat acute or chronic lung damage. For example, emphysema, which results in the progressive loss of aveoli, and inhalation injuries, i.e., resulting from smoke inhalation and burns, that cause necrosis of the bronchiolar epithelium and alveoli could be effectively treated using polynucleotides or polypeptides, agonists or antagonists of the present invention. Also, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to stimulate the proliferation of and differentiation of type II pneumocytes, which may help treat or prevent disease such as hyaline membrane diseases, such as infant respiratory distress syndrome and bronchopulmonary displasia, in premature infants.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could stimulate the proliferation and differentiation of hepatocytes and, thus, could be used to alleviate or treat liver diseases and pathologies such as fulminant liver failure caused by cirrhosis, liver damage caused by viral hepatitis and toxic substances (i.e., acetaminophen, carbon tetraholoride and other hepatotoxins known in the art).

In addition, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used treat or prevent the onset of diabetes mellitus. In patients with newly diagnosed Types I and II diabetes, where some islet cell function remains, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to maintain the islet function so as to alleviate, delay or prevent permanent

manifestation of the disease. Also, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used as an auxiliary in islet cell transplantation to improve or promote islet cell function.

Neurological Diseases

In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to stimulate neurological cell proliferation and/or differentiation. Therefore, polynucleotides, polypeptides, agonists and/or antagonists of the invention may be used to treat and/or detect neurologic diseases. Moreover, polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used as a marker or detector of a particular nervous system disease or disorder.

Examples of neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include brain diseases, such as metabolic brain diseases which includes phenylketonuria such as maternal phenylketonuria, pyruvate carboxylase deficiency, pyruvate dehydrogenase complex deficiency, Wernicke's Encephalopathy, brain edema, brain neoplasms such as cerebellar neoplasms which include infratentorial neoplasms, cerebral ventricle neoplasms such as choroid plexus neoplasms, hypothalamic neoplasms, supratentorial neoplasms, canavan disease, cerebellar diseases such as cerebellar ataxia which include spinocerebellar degeneration such as ataxia telangiectasia, cerebellar dyssynergia, Friederich's Ataxia, Machado-Joseph Disease, olivopontocerebellar atrophy, cerebellar neoplasms such as infratentorial neoplasms, diffuse cerebral sclerosis such as encephalitis periaxialis, globoid cell leukodystrophy, metachromatic leukodystrophy and subacute sclerosing panencephalitis, cerebrovascular disorders (such as carotid artery diseases which include carotid artery thrombosis, carotid stenosis and Moyamoya Disease, cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformations, cerebral artery diseases, cerebral embolism and thrombosis such as carotid artery thrombosis, sinus thrombosis and Wallenberg's Syndrome, cerebral hemorrhage such as epidural hematoma, subdural hematoma and subarachnoid hemorrhage, cerebral infarction, cerebral ischemia such as transient cerebral ischemia, Subclavian Steal Syndrome and vertebrobasilar insufficiency, vascular dementia such as multi-infarct dementia, periventricular leukomalacia,

vascular headache such as cluster headache. migraine. dementia such as AIDS Dementia Complex. presenile dementia such as Alzheimer's Disease and Creutzfeldt-Jakob Syndrome, senile dementia such as Alzheimer's Disease and progressive supranuclear palsy, vascular dementia such as multi-infarct dementia, encephalitis which include encephalitis periaxialis, viral encephalitis such as epidemic encephalitis, Japanese Encephalitis, St. Louis Encephalitis, tick-borne encephalitis and West Nile Fever, acute disseminated encephalomyelitis, meningoencephalitis such as uveomeningoencephalitic syndrome, Postencephalitic Parkinson Disease and subacute sclerosing panencephalitis, encephalomalacia such as periventricular leukomalacia, epilepsy such as generalized epilepsy which includes infantile spasms. absence epilepsy, myoclonic epilepsy which includes MERRF Syndrome, tonic-clonic epilepsy, partial epilepsy such as complex partial epilepsy, frontal lobe epilepsy and temporal lobe epilepsy, post-traumatic epilepsy, status epilepticus such as Epilepsia Partialis Continua, Hallervorden-Spatz Syndrome, hydrocephalus such as Dandy-Walker Syndrome and normal pressure hydrocephalus, hypothalamic diseases such as hypothalamic neoplasms, cerebral malaria, narcolepsy which includes cataplexy, bulbar poliomyelitis, cerebri pseudotumor, Rett Syndrome, Reye's Syndrome, thalamic diseases, cerebral toxoplasmosis, intracranial tuberculoma and Zellweger Syndrome, central nervous system infections such as AIDS Dementia Complex, Brain Abscess, subdural empyema, encephalomyelitis such as Equine Encephalomyelitis, Venezuelan Equine Encephalomyelitis, Necrotizing Hemorrhagic Encephalomyelitis, Visna, cerebral malaria, meningitis such as arachnoiditis, aseptic meningtitis such as viral meningtitis which includes lymphocytic choriomeningitis. Bacterial meningtitis which includes Haemophilus Meningtitis, Listeria Meningtitis. Meningococcal Meningtitis such as Waterhouse-Friderichsen Syndrome, Pneumococcal Meningtitis and meningeal tuberculosis, fungal meningitis such as Cryptococcal Meningtitis, subdural effusion, meningoencephalitis such as uvemeningoencephalitic syndrome, myelitis such as transverse myelitis, neurosyphilis such as tabes dorsalis, poliomyelitis which includes bulbar poliomyelitis and postpoliomyelitis syndrome. prion diseases (such as Creutzfeldt-Jakob Syndrome, Bovine Spongiform Encephalopathy, Gerstmann-Straussler Syndrome, Kuru, Scrapie) cerebral toxoplasmosis, central nervous system neoplasms such as brain neoplasms that include cerebellear neoplasms such as infratentorial neoplasms, cerebral ventricle neoplasms such as choroid plexus neoplasms, hypothalamic neoplasms and supratentorial neoplasms, meningeal

neoplasms, spinal cord neoplasms which include epidural neoplasms, demyelinating diseases such as Canavan Diseases, diffuse cerebral sceloris which includes adrenoleukodystrophy, encephalitis periaxialis, globoid cell leukodystrophy, diffuse cerebral sclerosis such as metachromatic leukodystrophy, allergic encephalomyelitis, necrotizing hemorrhagic encephalomyelitis, progressive multifocal leukoencephalopathy, multiple sclerosis, central pontine myelinolysis, transverse myelitis, neuromyelitis optica, Scrapie, Swayback, Chronic Fatigue Syndrome, Visna, High Pressure Nervous Syndrome, Meningism, spinal cord diseases such as amyotonia congenita, amyotrophic lateral sclerosis, spinal muscular atrophy such as Werdnig-Hoffmann Disease, spinal cord compression, spinal cord neoplasms such as epidural neoplasms, syringomyelia, Tabes Dorsalis, Stiff-Man Syndrome, mental retardation such as Angelman Syndrome, Cri-du-Chat Syndrome, De Lange's Syndrome, Down Syndrome, Gangliosidoses such as gangliosidoses G(M1), Sandhoff Disease, Tay-Sachs Disease, Hartnup Disease, homocystinuria, Laurence-Moon- Biedl Syndrome, Lesch-Nyhan Syndrome, Maple Syrup Urine Disease, mucolipidosis such as fucosidosis, neuronal ceroid-lipofuscinosis, oculocerebrorenal syndrome, phenylketonuria such as maternal phenylketonuria, Prader-Willi Syndrome, Rett Syndrome, Rubinstein-Taybi Syndrome, Tuberous Sclerosis, WAGR Syndrome, nervous system abnormalities such as holoprosencephaly, neural tube defects such as anencephaly which includes hydrangencephaly, Arnold-Chairi Deformity, encephalocele, meningocele, meningomyelocele, spinal dysraphism such as spina bifida cystica and spina bifida occulta, hereditary motor and sensory neuropathies which include Charcot-Marie Disease, Hereditary optic atrophy, Refsum's Disease, hereditary spastic paraplegia, Werdnig-Hoffmann Disease, Hereditary Sensory and Autonomic Neuropathies such as Congenital Analgesia and Familial Dysautonomia, Neurologic manifestations (such as agnosia that include Gerstmann's Syndrome, Amnesia such as retrograde amnesia, apraxia, neurogenic bladder, cataplexy, communicative disorders such as hearing disorders that includes deafness, partial hearing loss, loudness recruitment and tinnitus, language disorders such as aphasia which include agraphia, anomia, broca aphasia, and Wernicke Aphasia, Dyslexia such as Acquired Dyslexia, language development disorders, speech disorders such as aphasia which includes anomia, broca aphasia and Wernicke Aphasia, articulation disorders, communicative disorders such as speech disorders which include dysarthria, echolalia, mutism and stuttering, voice disorders such as aphonia and hoarseness, decerebrate state, delirium, fasciculation,

hallucinations. meningism. movement disorders such as angelman syndrome, ataxia. athetosis. chorea. dystonia. hypokinesia. muscle hypotonia. myoclonus. tic, torticollis and tremor, muscle hypertonia such as muscle rigidity such as stiff-man syndrome, muscle spasticity, paralysis such as facial paralysis which includes Herpes Zoster Oticus, Gastroparesis. Hemiplegia, ophthalmoplegia such as diplopia, Duane's Syndrome, Horner's Syndrome, Chronic progressive external ophthalmoplegia such as Kearns Syndrome, Bulbar Paralysis, Tropical Spastic Paraparesis, Paraplegia such as Brown-Sequard Syndrome, quadriplegia, respiratory paralysis and vocal cord paralysis, paresis, phantom limb, taste disorders such as ageusia and dysgeusia, vision disorders such as amblyopia, blindness, color vision defects, diplopia, hemianopsia. scotoma and subnormal vision, sleep disorders such as hypersomnia which includes Kleine-Levin Syndrome, insomnia, and somnambulism, spasm such as trismus. unconsciousness such as coma, persistent vegetative state and syncope and vertigo, neuromuscular diseases such as amyotonia congenita, amyotrophic lateral sclerosis, Lambert-Eaton Myasthenic Syndrome, motor neuron disease, muscular atrophy such as spinal muscular atrophy, Charcot-Marie Disease and Werdnig-Hoffmann Disease, Postpoliomyelitis Syndrome, Muscular Dystrophy, Myasthenia Gravis, Myotonia Atrophica, Myotonia Confenita, Nemaline Myopathy, Familial Periodic Paralysis, Multiplex Paramyloclonus, Tropical Spastic Paraparesis and Stiff-Man Syndrome, peripheral nervous system diseases such as acrodynia, amyloid neuropathies, autonomic nervous system diseases such as Adie's Syndrome, Barre-Lieou Syndrome, Familial Dysautonomia, Horner's Syndrome, Reflex Sympathetic Dystrophy and Shy-Drager Syndrome, Cranial Nerve Diseases such as Acoustic Nerve Diseases such as Acoustic Neuroma which includes Neurofibromatosis 2, Facial Nerve Diseases such as Facial Neuralgia,Melkersson-Rosenthal Syndrome, ocular motility disorders which includes amblyopia, nystagmus, oculomotor nerve paralysis, ophthalmoplegia such as Duane's Syndrome, Horner's Syndrome, Chronic Progressive External Ophthalmoplegia which includes Kearns Syndrome, Strabismus such as Esotropia and Exotropia, Oculomotor Nerve Paralysis, Optic Nerve Diseases such as Optic Atrophy which includes Hereditary Optic Atrophy, Optic Disk Drusen. Optic Neuritis such as Neuromyelitis Optica, Papilledema, Trigeminal Neuralgia, Vocal Cord Paralysis, Demyelinating Diseases such as Neuromyelitis Optica and Swayback. Diabetic neuropathies such as diabetic foot, nerve compression syndromes such as carpal tunnel syndrome, tarsal tunnel syndrome, thoracic outlet syndrome such as cervical rib syndrome, ulnar nerve

compression syndrome. neuralgia such as causalgia, cervico-brachial neuralgia, facial neuralgia and trigeminal neuralgia, neuritis such as experimental allergic neuritis, optic neuritis, polyneuritis, polyradiculoneuritis and radiculities such as polyradiculitis, hereditary motor and sensory neuropathies such as Charcot-Marie Disease. Hereditary Optic Atrophy, Refsum's Disease, Hereditary Spastic Paraplegia and Werdnig-Hoffmann Disease. Hereditary Sensory and Autonomic Neuropathies which include Congenital Analgesia and Familial Dysautonomia, POEMS Syndrome, Sciatica, Gustatory Sweating and Tetany).

Infectious Disease

Polynucleotides or polypeptides. as well as agonists or antagonists of the present invention can be used to treat or detect infectious agents. For example, by increasing the immune response, particularly increasing the proliferation and differentiation of B and/or T cells, infectious diseases may be treated. The immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may also directly inhibit the infectious agent, without necessarily eliciting an immune response.

Viruses are one example of an infectious agent that can cause disease or symptoms that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention. Examples of viruses, include, but are not limited to Examples of viruses, include, but are not limited to the following DNA and RNA viruses and viral families: Arbovirus, Adenoviridae, Arenaviridae, Arterivirus, Birnaviridae, Bunyaviridae, Caliciviridae, Circoviridae, Coronaviridae, Dengue, EBV, HIV, Flaviviridae, Hepadnaviridae (Hepatitis), Herpesviridae (such as, Cytomegalovirus, Herpes Simplex, Herpes Zoster), Mononegavirus (e.g., Paramyxoviridae, Morbillivirus, Rhabdoviridae), Orthomyxoviridae (e.g., Influenza A, Influenza B, and parainfluenza), Papiloma virus, Papovaviridae, Parvoviridae, Picornaviridae, Poxviridae (such as Smallpox or Vaccinia), Reoviridae (e.g., Rotavirus), Retroviridae (HTLV-I, HTLV-II, Lentivirus), and Togaviridae (e.g., Rubivirus). Viruses falling within these families can cause a variety of diseases or symptoms, including, but not limited to: arthritis. bronchiollitis. respiratory syncytial virus. encephalitis, eye infections (e.g., conjunctivitis, keratitis), chronic fatigue syndrome, hepatitis (A, B, C, E, Chronic Active, Delta), Japanese B encephalitis, Junin, Chikungunya, Rift Valley fever,

yellow fever. meningitis. opportunistic infections (e.g.. AIDS). pneumonia. Burkitt's Lymphoma. chickenpox, hemorrhagic fever, Measles, Mumps, Parainfluenza. Rabies, the common cold. Polio, leukemia, Rubella, sexually transmitted diseases, skin diseases (e.g., Kaposi's, warts), and viremia. polynucleotides or polypeptides, or agonists or antagonists of the invention. can be used to treat or detect any of these symptoms or diseases. In specific embodiments. polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat: meningitis, Dengue, EBV, and/or hepatitis (e.g., hepatitis B). In an additional specific embodiment polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat patients nonresponsive to one or more other commercially available hepatitis vaccines. In a further specific embodiment polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat AIDS.

Similarly, bacterial or fungal agents that can cause disease or symptoms and that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention include, but not limited to, include, but not limited to, the following Gram-Negative and Gram-positive bacteria and bacterial families and fungi: Actinomycetales (e.g., Corynebacterium, Mycobacterium, Norcardia), Cryptococcus neoformans, Aspergillosis, Bacillaceae (e.g., Anthrax, Clostridium), Bacteroidaceae, Blastomycosis, Bordetella, Borrelia (e.g., Borrelia burgdorferi, Brucellosis, Candidiasis, Campylobacter, Coccidioidomycosis, Cryptococcosis, Dermatocycoses, E. coli (e.g., Enterotoxigenic E. coli and Enterohemorrhagic E. coli), Enterobacteriaceae (Klebsiella, Salmonella (e.g., Salmonella typhi, and Salmonella paratyphi), Serratia, Yersinia), Erysipelothrix, Helicobacter, Legionellosis. Leptospirosis, Listeria, Mycoplasmatales, Mycobacterium leprae, Vibrio cholerae, Neisseriaceae (e.g., Acinetobacter, Gonorrhea, Menigococcal), Meisseria meningitidis, Pasteurellacea Infections (e.g., Actinobacillus, Heamophilus (e.g., Heamophilus influenza type B), Pasteurella), Pseudomonas, Rickettsiaceae, Chlamydiaceae, Syphilis, Shigella spp., Staphylococcal, Meningiococcal, Pneumococcal and Streptococcal (e.g., Streptococcus pneumoniae and Group B Streptococcus). These bacterial or fungal families can cause the following diseases or symptoms, including, but not limited to: bacteremia, endocarditis. eye infections (conjunctivitis, tuberculosis, uveitis), gingivitis, opportunistic infections (e.g., AIDS related infections). paronychia. prosthesis-related infections. Reiter's Disease, respiratory tract infections, such as Whooping Cough or Empyema, sepsis, Lyme Disease, Cat-Scratch Disease, Dysentery, Paratyphoid Fever, food poisoning, Typhoid,

pneumonia, Gonorrhea, meningitis (e.g., mengitis types A and B), Chlamydia, Syphilis, Diphtheria, Leprosy, Paratuberculosis, Tuberculosis, Lupus, Botulism, gangrene, tetanus, impetigo, Rheumatic Fever, Scarlet Fever, sexually transmitted diseases, skin diseases (e.g., cellulitis, dermatocycoses), toxemia, urinary tract infections, wound infections. Polynucleotides or polypeptides, agonists or antagonists of the invention, can be used to treat or detect any of these symptoms or diseases. In specific embodiments, Ppolynucleotides, polypeptides, agonists or antagonists of the invention are used to treat: tetanus, Diptheria, botulism, and/or meningitis type B.

Moreover, parasitic agents causing disease or symptoms that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention include, but not limited to, the following families or class: Amebiasis, Babesiosis, Coccidiosis, Cryptosporidiosis, Dientamoebiasis, Dourine, Ectoparasitic, Giardiasis, Helminthiasis, Leishmaniasis, Theileriasis, Toxoplasmosis, Trypanosomiasis, and Trichomonas and Sporozoans (e.g., Plasmodium virax, Plasmodium falciparium, Plasmodium malariae and Plasmodium ovale). These parasites can cause a variety of diseases or symptoms, including, but not limited to: Scabies, Trombiculiasis, eye infections, intestinal disease (e.g., dysentery, giardiasis), liver disease, lung disease, opportunistic infections (e.g., AIDS related), malaria, pregnancy complications, and toxoplasmosis. polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used to treat or detect any of these symptoms or diseases.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention of the present invention could either be by administering an effective amount of a polypeptide to the patient, or by removing cells from the patient, supplying the cells with a polynucleotide of the present invention, and returning the engineered cells to the patient (ex vivo therapy). Moreover, the polypeptide or polynucleotide of the present invention can be used as an antigen in a vaccine to raise an immune response against infectious disease.

Regeneration

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention can be used to differentiate, proliferate, and attract cells, leading to the regeneration of tissues. (See, Science 276:59-87 (1997).) The regeneration of tissues could be used to repair, replace, or protect tissue damaged by congenital defects, trauma (wounds, burns,

incisions, or ulcers), age, disease (e.g. osteoporosis, osteocarthritis, periodontal disease, liver failure), surgery, including cosmetic plastic surgery, fibrosis, reperfusion injury, or systemic cytokine damage.

Tissues that could be regenerated using the present invention include organs (e.g., pancreas, liver, intestine, kidney, skin, endothelium), muscle (smooth, skeletal or cardiac), vasculature (including vascular and lymphatics), nervous, hematopoietic, and skeletal (bone, cartilage, tendon, and ligament) tissue. Preferably, regeneration occurs without or decreased scarring. Regeneration also may include angiogenesis.

Moreover, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may increase regeneration of tissues difficult to heal.. For example, increased tendon/ligament regeneration would quicken recovery time after damage. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could also be used prophylactically in an effort to avoid damage. Specific diseases that could be treated include of tendinitis, carpal tunnel syndrome, and other tendon or ligament defects. A further example of tissue regeneration of non-healing wounds includes pressure ulcers, ulcers associatedwith vascular insufficiency, surgical, and traumatic wounds.

Similarly, nerve and brain tissue could also be regenerated by using polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, to proliferate and differentiate nerve cells. Diseases that could be treated using this method include central and peripheral nervous system diseases, neuropathies, or mechanical and traumatic disorders (e.g., spinal cord disorders, head trauma, cerebrovascular disease, and stoke). Specifically, diseases associated with peripheral nerve injuries, peripheral neuropathy (e.g., resulting from chemotherapy or other medical therapies), localized neuropathies, and central nervous system diseases (e.g., Alzheimer's disease, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis, and Shy-Drager syndrome), could all be treated using the polynucleotides or polypeptides, as well as agonists or antagonists of the present invention.

Chemotaxis

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may have chemotaxis activity. A chemotaxic molecule attracts or mobilizes cells (e.g., monocytes, fibroblasts, neutrophils, T-cells, mast cells, eosinophils, epithelial and/or endothelial cells) to a particular site in the body, such as inflammation, infection, or site of

hyperproliferation. The mobilized cells can then fight off and/or heal the particular trauma or abnormality.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may increase chemotaxic activity of particular cells. These chemotactic molecules can then be used to treat inflammation, infection, hyperproliferative disorders, or any immune system disorder by increasing the number of cells targeted to a particular location in the body. For example, chemotaxic molecules can be used to treat wounds and other trauma to tissues by attracting immune cells to the injured location. Chemotactic molecules of the present invention can also attract fibroblasts, which can be used to treat wounds.

It is also contemplated that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may inhibit chemotactic activity. These molecules could also be used to treat disorders. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could be used as an inhibitor of chemotaxis.

Binding Activity

A polypeptide of the present invention may be used to screen for molecules that bind to the polypeptide or for molecules to which the polypeptide binds. The binding of the polypeptide and the molecule may activate (agonist), increase, inhibit (antagonist), or decrease activity of the polypeptide or the molecule bound. Examples of such molecules include antibodies, oligonucleotides, proteins (e.g., receptors),or small molecules.

Preferably, the molecule is closely related to the natural ligand of the polypeptide, e.g., a fragment of the ligand, or a natural substrate, a ligand, a structural or functional mimetic. (See, Coligan et al., Current Protocols in Immunology 1(2):Chapter 5 (1991).) Similarly, the molecule can be closely related to the natural receptor to which the polypeptide binds, or at least, a fragment of the receptor capable of being bound by the polypeptide (e.g., active site). In either case, the molecule can be rationally designed using known techniques.

Preferably, the screening for these molecules involves producing appropriate cells which express the polypeptide. Preferred cells include cells from mammals, yeast, Drosophila, or *E. coli*. Cells expressing the polypeptide (or cell membrane containing the expressed polypeptide) are then preferably contacted with a test compound potentially containing the molecule to observe binding, stimulation, or inhibition of activity of either the polypeptide or the molecule.

The assay may simply test binding of a candidate compound to the polypeptide, wherein binding is detected by a label, or in an assay involving competition with a labeled competitor. Further, the assay may test whether the candidate compound results in a signal generated by binding to the polypeptide.

Alternatively, the assay can be carried out using cell-free preparations, polypeptide/molecule affixed to a solid support, chemical libraries, or natural product mixtures. The assay may also simply comprise the steps of mixing a candidate compound with a solution containing a polypeptide, measuring polypeptide/molecule activity or binding, and comparing the polypeptide/molecule activity or binding to a standard.

Preferably, an ELISA assay can measure polypeptide level or activity in a sample (e.g., biological sample) using a monoclonal or polyclonal antibody. The antibody can measure polypeptide level or activity by either binding, directly or indirectly, to the polypeptide or by competing with the polypeptide for a substrate.

Additionally, the receptor to which the polypeptide of the present invention binds can be identified by numerous methods known to those of skill in the art, for example, ligand panning and FACS sorting (Coligan, et al., Current Protocols in Immun., 1(2), Chapter 5, (1991)). For example, expression cloning is employed wherein polyadenylated RNA is prepared from a cell responsive to the polypeptides, for example, NIH3T3 cells which are known to contain multiple receptors for the FGF family proteins, and SC-3 cells, and a cDNA library created from this RNA is divided into pools and used to transfect COS cells or other cells that are not responsive to the polypeptides. Transfected cells which are grown on glass slides are exposed to the polypeptide of the present invention, after they have been labelled. The polypeptides can be labeled by a variety of means including iodination or inclusion of a recognition site for a site-specific protein kinase.

Following fixation and incubation, the slides are subjected to auto-radiographic analysis. Positive pools are identified and sub-pools are prepared and re-transfected using an iterative sub-pooling and re-screening process, eventually yielding a single clones that encodes the putative receptor.

As an alternative approach for receptor identification, the labeled polypeptides can be photoaffinity linked with cell membrane or extract preparations that express the receptor molecule. Cross-linked material is resolved by PAGE analysis and exposed to X-ray film. The labeled complex containing the receptors of the polypeptides can be excised, resolved

into peptide fragments, and subjected to protein microsequencing. The amino acid sequence obtained from microsequencing would be used to design a set of degenerate oligonucleotide probes to screen a cDNA library to identify the genes encoding the putative receptors.

Moreover, the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling") may be employed to modulate the activities of the polypeptide of the present invention thereby effectively generating agonists and antagonists of the polypeptide of the present invention. *See generally*, U.S. Patent Nos. 5,605,793, 5,811,238, 5,830,721, 5,834,252, and 5,837,458, and Patten, P. A., *et al., Curr. Opinion Biotechnol.* 8:724-33 (1997); Harayama, S. *Trends Biotechnol.* 16(2):76-82 (1998); Hansson, L. O., *et al., J. Mol. Biol.* 287:265-76 (1999); and Lorenzo, M. M. and Blasco, R. *Biotechniques* 24(2):308-13 (1998) (each of these patents and publications are hereby incorporated by reference). In one embodiment, alteration of polynucleotides and corresponding polypeptides may be achieved by DNA shuffling. DNA shuffling involves the assembly of two or more DNA segments into a desired molecule by homologous, or site-specific, recombination. In another embodiment, polynucleotides and corresponding polypeptides may be alterred by being subjected to random mutagenesis by error-prone PCR, random nucleotide insertion or other methods prior to recombination. In another embodiment, one or more components, motifs, sections, parts, domains, fragments, etc., of the polypeptide of the present invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc. of one or more heterologous molecules. In preferred embodiments, the heterologous molecules are family members. In further preferred embodiments, the heterologous molecule is a growth factor such as, for example, platelet-derived growth factor (PDGF), insulin-like growth factor (IGF-I), transforming growth factor (TGF)-alpha, epidermal growth factor (EGF), fibroblast growth factor (FGF), TGF-beta, bone morphogenetic protein (BMP)-2, BMP-4, BMP-5, BMP-6, BMP-7, activins A and B, decapentaplegic(dpp), 60A, OP-2, dorsalin, growth differentiation factors (GDFs), nodal, MIS, inhibin-alpha, TGF-beta1, TGF-beta2, TGF-beta3, TGF-beta5, and glial-derived neurotrophic factor (GDNF).

Other preferred fragments are biologically active fragments of the polypeptide of the present invention. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present invention. The

biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

Additionally, this invention provides a method of screening compounds to identify those which modulate the action of the polypeptide of the present invention. An example of such an assay comprises combining a mammalian fibroblast cell, a the polypeptide of the present invention, the compound to be screened and ^{3}[H] thymidine under cell culture conditions where the fibroblast cell would normally proliferate. A control assay may be performed in the absence of the compound to be screened and compared to the amount of fibroblast proliferation in the presence of the compound to determine if the compound stimulates proliferation by determining the uptake of ^{3}[H] thymidine in each case. The amount of fibroblast cell proliferation is measured by liquid scintillation chromatography which measures the incorporation of ^{3}[H] thymidine. Both agonist and antagonist compounds may be identified by this procedure.

In another method, a mammalian cell or membrane preparation expressing a receptor for a polypeptide of the present invention is incubated with a labeled polypeptide of the present invention in the presence of the compound. The ability of the compound to enhance or block this interaction could then be measured. Alternatively, the response of a known second messenger system following interaction of a compound to be screened and the receptor is measured and the ability of the compound to bind to the receptor and elicit a second messenger response is measured to determine if the compound is a potential agonist or antagonist. Such second messenger systems include but are not limited to, cAMP guanylate cyclase, ion channels or phosphoinositide hydrolysis.

All of these above assays can be used as diagnostic or prognostic markers. The molecules discovered using these assays can be used to treat disease or to bring about a particular result in a patient (e.g., blood vessel growth) by activating or inhibiting the polypeptide/molecule. Moreover, the assays can discover agents which may inhibit or enhance the production of the polypeptides of the invention from suitably manipulated cells or tissues.

Therefore, the invention includes a method of identifying compounds which bind to a polypeptide of the invention comprising the steps of: (a) incubating a candidate binding compound with a polypeptide of the present invention; and (b) determining if binding has

occurred. Moreover, the invention includes a method of identifying agonists/antagonists comprising the steps of: (a) incubating a candidate compound with a polypeptide of the present invention, (b) assaying a biological activity, and (b) determining if a biological activity of the polypeptide has been altered.

Targeted Delivery

In another embodiment, the invention provides a method of delivering compositions to targeted cells expressing a receptor for a polypeptide of the invention, or cells expressing a cell bound form of a polypeptide of the invention.

As discussed herein, polypeptides or antibodies of the invention may be associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions. In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (including antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention (e.g., polypeptides of the invention or antibodies of the invention) in association with toxins or cytotoxic prodrugs.

By "toxin" is meant compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNAse, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin,

momordin, gelonin. pokeweed antiviral protein. alpha-sarcin and cholera toxin. By "cytotoxic prodrug" is meant a non-toxic compound that is converted by an enzyme, normally present in the cell, into a cytotoxic compound. Cytotoxic prodrugs that may be used according to the methods of the invention include. but are not limited to, glutamyl derivatives of benzoic acid mustard alkylating agent. phosphate derivatives of etoposide or mitomycin C, cytosine arabinoside, daunorubisin. and phenoxyacetamide derivatives of doxorubicin.

Drug Screening

Further contemplated is the use of the polypeptides of the present invention, or the polynucleotides encoding these polypeptides, to screen for molecules which modify the activities of the polypeptides of the present invention. Such a method would include contacting the polypeptide of the present invention with a selected compound(s) suspected of having antagonist or agonist activity, and assaying the activity of these polypeptides following binding.

This invention is particularly useful for screening therapeutic compounds by using the polypeptides of the present invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in such a test may be affixed to a solid support, expressed on a cell surface, free in solution, or located intracellularly. One method of drug screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding assays. One may measure, for example, the formulation of complexes between the agent being tested and a polypeptide of the present invention.

Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the polypeptides of the present invention. These methods comprise contacting such an agent with a polypeptide of the present invention or a fragment thereof and assaying for the presence of a complex between the agent and the polypeptide or a fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically labeled. Following incubation. free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a

measure of the ability of a particular agent to bind to the polypeptides of the present invention.

Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the polypeptides of the present invention, and is described in great detail in European Patent Application 84/03564, published on September 13, 1984, which is incorporated herein by reference herein. Briefly stated, large numbers of different small peptide test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The peptide test compounds are reacted with polypeptides of the present invention and washed. Bound polypeptides are then detected by methods well known in the art. Purified polypeptides are coated directly onto plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid support.

This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding polypeptides of the present invention specifically compete with a test compound for binding to the polypeptides or fragments thereof. In this manner, the antibodies are used to detect the presence of any peptide which shares one or more antigenic epitopes with a polypeptide of the invention.

Antisense And Ribozyme (Antagonists)

In specific embodiments. antagonists according to the present invention are nucleic acids corresponding to the sequences contained in SEQ ID NO:X, or the complementary strand thereof, and/or to nucleotide sequences contained in the cDNA contained in the related cDNA clone identified in Table 1. In one embodiment, antisense sequence is generated internally, by the organism, in another embodiment, the antisense sequence is separately administered (see, for example, O'Connor, J., Neurochem. 56:560 (1991). Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Antisense technology can be used to control gene expression through antisense DNA or RNA, or through triple-helix formation. Antisense techniques are discussed for example, in Okano, J., Neurochem. 56:560 (1991); Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression. CRC Press. Boca Raton, FL (1988). Triple helix formation is discussed in, for instance, Lee et al., Nucleic Acids Research 6:3073 (1979); Cooney et al.,

Science 241:456 (1988); and Dervan et al., Science 251:1300 (1991). The methods are based on binding of a polynucleotide to a complementary DNA or RNA.

For example, the use of c-myc and c-myb antisense RNA constructs to inhibit the growth of the non-lymphocytic leukemia cell line HL-60 and other cell lines was previously described. (Wickstrom et al. (1988); Anfossi et al. (1989)). These experiments were performed in vitro by incubating cells with the oligoribonucleotide. A similar procedure for in vivo use is described in WO 91/15580. Briefly, a pair of oligonucleotides for a given antisense RNA is produced as follows: A sequence complimentary to the first 15 bases of the open reading frame is flanked by an EcoR1 site on the 5 end and a HindIII site on the 3 end. Next, the pair of oligonucleotides is heated at 90°C for one minute and then annealed in 2X ligation buffer (20mM TRIS HCl pH 7.5, 10mM MgCl2, 10MM dithiothreitol (DTT) and 0.2 mM ATP) and then ligated to the EcoR1/Hind III site of the retroviral vector PMV7 (WO 91/15580).

For example, the 5' coding portion of a polynucleotide that encodes the polypeptide of the present invention may be used to design an antisense RNA oligonucleotide of from about 10 to 40 base pairs in length. A DNA oligonucleotide is designed to be complementary to a region of the gene involved in transcription thereby preventing transcription and the production of the receptor. The antisense RNA oligonucleotide hybridizes to the mRNA in vivo and blocks translation of the mRNA molecule into receptor polypeptide.

In one embodiment, the antisense nucleic acid of the invention is produced intracellularly by transcription from an exogenous sequence. For example, a vector or a portion thereof, is transcribed, producing an antisense nucleic acid (RNA) of the invention. Such a vector would contain a sequence encoding the antisense nucleic acid. Such a vector can remain episomal or become chromosomally integrated, as long as it can be transcribed to produce the desired antisense RNA. Such vectors can be constructed by recombinant DNA technology methods standard in the art. Vectors can be plasmid, viral, or others known in the art, used for replication and expression in vertebrate cells. Expression of the sequence encoding the polypeptide of the present invnetion or fragments thereof, can be by any promoter known in the art to act in vertebrate, preferably human cells. Such promoters can be inducible or constitutive. Such promoters include, but are not limited to, the SV40 early promoter region (Bernoist and Chambon, Nature 29:304-310 (1981), the promoter contained in the 3' long terminal repeat of Rous sarcoma virus (Yamamoto et al., Cell 22:787-797

(1980), the herpes thymidine promoter (Wagner et al., Proc. Natl. Acad. Sci. U.S.A. 78:1441-1445 (1981). the regulatory sequences of the metallothionein gene (Brinster, et al., Nature 296:39-42 (1982)), etc.

The antisense nucleic acids of the invention comprise a sequence complementary to at least a portion of an RNA transcript of a gene of the present invention. However, absolute complementarity, although preferred, is not required. A sequence "complementary to at least a portion of an RNA," referred to herein, means a sequence having sufficient complementarity to be able to hybridize with the RNA, forming a stable duplex; in the case of double stranded antisense nucleic acids, a single strand of the duplex DNA may thus be tested, or triplex formation may be assayed. The ability to hybridize will depend on both the degree of complementarity and the length of the antisense nucleic acid. Generally, the larger the hybridizing nucleic acid, the more base mismatches with a RNA it may contain and still form a stable duplex (or triplex as the case may be). One skilled in the art can ascertain a tolerable degree of mismatch by use of standard procedures to determine the melting point of the hybridized complex.

Oligonucleotides that are complementary to the 5' end of the message, e.g., the 5' untranslated sequence up to and including the AUG initiation codon, should work most efficiently at inhibiting translation. However, sequences complementary to the 3' untranslated sequences of mRNAs have been shown to be effective at inhibiting translation of mRNAs as well. See generally, Wagner, R., 1994, Nature 372:333-335. Thus, oligonucleotides complementary to either the 5'- or 3'- non- translated, non-coding regions of polynucleotide sequences described herein could be used in an antisense approach to inhibit translation of endogenous mRNA. Oligonucleotides complementary to the 5' untranslated region of the mRNA should include the complement of the AUG start codon. Antisense oligonucleotides complementary to mRNA coding regions are less efficient inhibitors of translation but could be used in accordance with the invention. Whether designed to hybridize to the 5'-, 3'- or coding region of mRNA of the present invention, antisense nucleic acids should be at least six nucleotides in length, and are preferably oligonucleotides ranging from 6 to about 50 nucleotides in length. In specific aspects the oligonucleotide is at least 10 nucleotides. at least 17 nucleotides, at least 25 nucleotides or at least 50 nucleotides.

The polynucleotides of the invention can be DNA or RNA or chimeric mixtures or derivatives or modified versions thereof, single-stranded or double-stranded. The

oligonucleotide can be modified at the base moiety, sugar moiety, or phosphate backbone, for example, to improve stability of the molecule, hybridization, etc. The oligonucleotide may include other appended groups such as peptides (e.g., for targeting host cell receptors in vivo), or agents facilitating transport across the cell membrane (see, e.g., Letsinger et al., 1989, Proc. Natl. Acad. Sci. U.S.A. 86:6553-6556; Lemaitre et al., 1987, Proc. Natl. Acad. Sci. 84:648-652; PCT Publication No. WO88/09810, published December 15, 1988) or the blood-brain barrier (see, e.g., PCT Publication No. WO89/10134, published April 25, 1988), hybridization-triggered cleavage agents. (See, e.g., Krol et al., 1988, BioTechniques 6:958-976) or intercalating agents. (See, e.g., Zon, 1988, Pharm. Res. 5:539-549). To this end, the oligonucleotide may be conjugated to another molecule, e.g., a peptide, hybridization triggered cross-linking agent, transport agent, hybridization-triggered cleavage agent, etc.

The antisense oligonucleotide may comprise at least one modified base moiety which is selected from the group including, but not limited to, 5-fluorouracil, 5-bromouracil, 5-chlorouracil, 5-iodouracil, hypoxanthine, xantine, 4-acetylcytosine, 5-(carboxyhydroxylmethyl) uracil, 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine, 7-methylguanine, 5-methylaminomethyluracil, 5-methoxyaminomethyl-2-thiouracil, beta-D-mannosylqueosine, 5'-methoxycarboxymethyluracil, 5-methoxyuracil, 2-methylthio-N6-isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-thiouracil, 5-methyluracil, uracil-5-oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-2-thiouracil, 3-(3-amino-3-N-2-carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine.

The antisense oligonucleotide may also comprise at least one modified sugar moiety selected from the group including, but not limited to, arabinose, 2-fluoroarabinose, xylulose, and hexose.

In yet another embodiment, the antisense oligonucleotide comprises at least one modified phosphate backbone selected from the group including, but not limited to, a phosphorothioate, a phosphorodithioate, a phosphoramidothioate. a phosphoramidate, a phosphordiamidate, a methylphosphonate, an alkyl phosphotriester, and a formacetal or analog thereof.

In yet another embodiment, the antisense oligonucleotide is an a-anomeric oligonucleotide. An a-anomeric oligonucleotide forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual b-units, the strands run parallel to each other (Gautier et al., 1987, Nucl. Acids Res. 15:6625-6641). The oligonucleotide is a 2'-0-methylribonucleotide (Inoue et al., 1987, Nucl. Acids Res. 15:6131-6148), or a chimeric RNA-DNA analogue (Inoue et al., 1987, FEBS Lett. 215:327-330).

Polynucleotides of the invention may be synthesized by standard methods known in the art, e.g. by use of an automated DNA synthesizer (such as are commercially available from Biosearch, Applied Biosystems, etc.). As examples, phosphorothioate oligonucleotides may be synthesized by the method of Stein et al. (1988, Nucl. Acids Res. 16:3209), methylphosphonate oligonucleotides can be prepared by use of controlled pore glass polymer supports (Sarin et al., 1988, Proc. Natl. Acad. Sci. U.S.A. 85:7448-7451), etc.

While antisense nucleotides complementary to the coding region sequence could be used, those complementary to the transcribed untranslated region are most preferred.

Potential antagonists according to the invention also include catalytic RNA, or a ribozyme (See, e.g., PCT International Publication WO 90/11364, published October 4, 1990; Sarver et al, Science 247:1222-1225 (1990). While ribozymes that cleave mRNA at site specific recognition sequences can be used to destroy mRNAs, the use of hammerhead ribozymes is preferred. Hammerhead ribozymes cleave mRNAs at locations dictated by flanking regions that form complementary base pairs with the target mRNA. The sole requirement is that the target mRNA have the following sequence of two bases: 5'-UG-3'. The construction and production of hammerhead ribozymes is well known in the art and is described more fully in Haseloff and Gerlach, Nature 334:585-591 (1988). There are numerous potential hammerhead ribozyme cleavage sites within the nucleotide sequence of SEQ ID NO:X. Preferably, the ribozyme is engineered so that the cleavage recognition site is located near the 5' end of the mRNA; i.e., to increase efficiency and minimize the intracellular accumulation of non-functional mRNA transcripts.

As in the antisense approach, the ribozymes of the invention can be composed of modified oligonucleotides (e.g. for improved stability, targeting, etc.) and should be delivered to cells which express in vivo. DNA constructs encoding the ribozyme may be introduced into the cell in the same manner as described above for the introduction of antisense encoding DNA. A preferred method of delivery involves using a DNA construct "encoding" the

ribozyme under the control of a strong constitutive promoter, such as, for example, pol III or pol II promoter, so that transfected cells will produce sufficient quantities of the ribozyme to destroy endogenous messages and inhibit translation. Since ribozymes unlike antisense molecules, are catalytic, a lower intracellular concentration is required for efficiency.

Antagonist/agonist compounds may be employed to inhibit the cell growth and proliferation effects of the polypeptides of the present invention on neoplastic cells and tissues, i.e. stimulation of angiogenesis of tumors, and, therefore, retard or prevent abnormal cellular growth and proliferation, for example, in tumor formation or growth.

The antagonist/agonist may also be employed to prevent hyper-vascular diseases, and prevent the proliferation of epithelial lens cells after extracapsular cataract surgery. Prevention of the mitogenic activity of the polypeptides of the present invention may also be desirous in cases such as restenosis after balloon angioplasty.

The antagonist/agonist may also be employed to prevent the growth of scar tissue during wound healing.

The antagonist/agonist may also be employed to treat the diseases described herein.

Thus, the invention provides a method of treating disorders or diseases, including but not limited to the disorders or diseases listed throughout this application, associated with overexpression of a polynucleotide of the present invention by administering to a patient (a) an antisense molecule directed to the polynucleotide of the present invention, and/or (b) a ribozyme directed to the polynucleotide of the present invention.

Other Activities

A polypeptide, polynucleotide, agonist, or antagonist of the present invention, as a result of the ability to stimulate vascular endothelial cell growth, may be employed in treatment for stimulating re-vascularization of ischemic tissues due to various disease conditions such as thrombosis, arteriosclerosis, and other cardiovascular conditions. The polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to stimulate angiogenesis and limb regeneration, as discussed above.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for treating wounds due to injuries, burns, post-operative tissue repair, and ulcers since they are mitogenic to various cells of different origins, such as fibroblast cells

and skeletal muscle cells, and therefore, facilitate the repair or replacement of damaged or diseased tissue.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed stimulate neuronal growth and to treat and prevent neuronal damage which occurs in certain neuronal disorders or neuro-degenerative conditions such as Alzheimer's disease, Parkinson's disease, and AIDS-related complex. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may have the ability to stimulate chondrocyte growth, therefore, they may be employed to enhance bone and periodontal regeneration and aid in tissue transplants or bone grafts.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be also be employed to prevent skin aging due to sunburn by stimulating keratinocyte growth.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for preventing hair loss, since FGF family members activate hair-forming cells and promotes melanocyte growth. Along the same lines, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be employed to stimulate growth and differentiation of hematopoietic cells and bone marrow cells when used in combination with other cytokines.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to maintain organs before transplantation or for supporting cell culture of primary tissues. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for inducing tissue of mesodermal origin to differentiate in early embryos.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also increase or decrease the differentiation or proliferation of embryonic stem cells, besides, as discussed above, hematopoietic lineage.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used to modulate mammalian characteristics. such as body height, weight, hair color, eye color, skin, percentage of adipose tissue, pigmentation, size, and shape (e.g., cosmetic surgery). Similarly, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to modulate mammalian metabolism affecting catabolism, anabolism, processing, utilization, and storage of energy.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to change a mammal's mental state or physical state by influencing biorhythms, caricadic rhythms, depression (including depressive disorders), tendency for violence, tolerance for pain, reproductive capabilities (preferably by Activin or Inhibin-like activity), hormonal or endocrine levels, appetite, libido, memory, stress, or other cognitive qualities.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used as a food additive or preservative, such as to increase or decrease storage capabilities, fat content, lipid, protein, carbohydrate, vitamins, minerals, cofactors or other nutritional components.

The above-recited applications have uses in a wide variety of hosts. Such hosts include, but are not limited to, human, murine, rabbit, goat, guinea pig, camel, horse, mouse, rat, hamster, pig, micro-pig, chicken, goat, cow, sheep, dog, cat, non-human primate, and human. In specific embodiments, the host is a mouse, rabbit, goat, guinea pig, chicken, rat, hamster, pig, sheep, dog or cat. In preferred embodiments, the host is a mammal. In most preferred embodiments, the host is a human.

Other Preferred Embodiments

Other preferred embodiments of the claimed invention include an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 50 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit.

Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of SEQ ID NO:X in the range of positions identified as "Start" and "End" in columns 7 and 8 as defined for SEQ ID NO:X in Table 1.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 150 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit.

Further preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 500 contiguous

nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit.

A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of SEQ ID NO:X in the range of positions identified as "Start" and "End" in columns 7 and 8 as defined for SEQ ID NO:X in Table 1.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit.

Also preferred is an isolated nucleic acid molecule which hybridizes under stringent hybridization conditions to a nucleic acid molecule comprising a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit, wherein said nucleic acid molecule which hybridizes does not hybridize under stringent hybridization conditions to a nucleic acid molecule having a nucleotide sequence consisting of only A residues or of only T residues.

Also preferred is a composition of matter comprising a DNA molecule which comprises a cDNA clone contained in the deposit.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in the nucleotide sequence of the cDNA in the related cDNA clone contained in the deposit.

Also preferred is an isolated nucleic acid molecule, wherein said sequence of at least 50 contiguous nucleotides is included in the nucleotide sequence of an open reading frame sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 150 contiguous nucleotides in the nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 500 contiguous nucleotides in the nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

A further preferred embodiment is a method for detecting in a biological sample a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; and a nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit; which method comprises a step of comparing a nucleotide sequence of at least one nucleic acid molecule in said sample with a sequence selected from said group and determining whether the sequence of said nucleic acid molecule in said sample is at least 95% identical to said selected sequence.

Also preferred is the above method wherein said step of comparing sequences comprises determining the extent of nucleic acid hybridization between nucleic acid molecules in said sample and a nucleic acid molecule comprising said sequence selected from said group. Similarly, also preferred is the above method wherein said step of comparing sequences is performed by comparing the nucleotide sequence determined from a nucleic acid molecule in said sample with said sequence selected from said group. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

A further preferred embodiment is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting nucleic acid molecules in said sample, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; and a nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

Also preferred is the above method for identifying the species, tissue or cell type of a biological sample which comprises a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleotide sequence of SEQ ID NO:X; or the cDNA contained in the related cDNA clone referenced in Table 1 which encodes a protein, wherein the method comprises a step of detecting in a biological sample obtained from said subject nucleic acid molecules, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; and a nucleotide sequence of the cDNA in the related cDNA clone contained in the deposit.

Also preferred is the above method for diagnosing a pathological condition which comprises a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; and a nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a DNA microarray or "chip" of at least 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, 50, 100, 150, 200, 250, 300, 500, 1000, 2000, 3000 or 4000 nucleotide sequences, wherein at least one sequence in said DNA microarray or "chip" is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; and a nucleotide sequence encoded by the cDNA in the cDNA clone referenced in Table 1. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the complete amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the complete amino acid sequence of a polypeptide encoded by the cDNA clone referenced in Table 1.

Also preferred is a polypeptide wherein said sequence of contiguous amino acids is included in the amino acid sequence of a portion of said polypeptide encoded by the cDNA clone referenced in Table 1; a polypeptide encoded by SEQ ID NO:X; and/or the polypeptide sequence of SEQ ID NO:Y.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of a polypeptide encoded by the cDNA clone referenced in Table 1.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of a polypeptide encoded by the cDNA clone referenced in Table 1.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the amino acid sequence of a polypeptide encoded by the cDNA clone referenced in Table 1.

Further preferred is an isolated antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Further preferred is a method for detecting in a biological sample a polypeptide comprising an amino acid sequence which is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1; which method comprises a step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group and determining whether the sequence of said polypeptide molecule in said sample is at least 90% identical to said sequence of at least 10 contiguous amino acids.

Also preferred is the above method wherein said step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group comprises determining the extent of specific binding of polypeptides in said sample to an antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

Also preferred is the above method wherein said step of comparing sequences is performed by comparing the amino acid sequence determined from a polypeptide molecule in said sample with said sequence selected from said group.

Also preferred is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting polypeptide molecules in said sample, if any, comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

Also preferred is the above method for identifying the species. tissue or cell type of a biological sample, which method comprises a step of detecting polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the above group.

Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleic acid sequence identified in Table 1 encoding a polypeptide, which method comprises a step of detecting in a biological sample obtained from said subject polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

In any of these methods, the step of detecting said polypeptide molecules includes using an antibody.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a nucleotide sequence encoding a polypeptide wherein said polypeptide comprises an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

Also preferred is an isolated nucleic acid molecule, wherein said nucleotide sequence encoding a polypeptide has been optimized for expression of said polypeptide in a prokaryotic host.

Also preferred is an isolated nucleic acid molecule, wherein said polypeptide comprises an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X: and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

Further preferred is a method of making a recombinant vector comprising inserting any of the above isolated nucleic acid molecule into a vector. Also preferred is the recombinant vector produced by this method. Also preferred is a method of making a

recombinant host cell comprising introducing the vector into a host cell. as well as the recombinant host cell produced by this method.

Also preferred is a method of making an isolated polypeptide comprising culturing this recombinant host cell under conditions such that said polypeptide is expressed and recovering said polypeptide. Also preferred is this method of making an isolated polypeptide, wherein said recombinant host cell is a eukaryotic cell and said polypeptide is a human protein comprising an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1. The isolated polypeptide produced by this method is also preferred.

Also preferred is a method of treatment of an individual in need of an increased level of a protein activity, which method comprises administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to increase the level of said protein activity in said individual.

Also preferred is a method of treatment of an individual in need of a decreased level of a protein activity, which method comprised administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to decrease the level of said protein activity in said individual.

Having generally described the invention, the same will be more readily understood by reference to the following examples, which are provided by way of illustration and are not intended as limiting.

Examples

Example 1: Isolation of a Selected cDNA Clone From the Deposited Sample

Each deposited cDNA clone is contained in a plasmid vector. Table 5 identifies the vectors used to construct the cDNA library from which each clone was isolated. In many cases, the vector used to construct the library is a phage vector from which a plasmid has been excised. The following correlates the related plasmid for each phage vector used in constructing the cDNA library. For example, where a particular clone is identified in Table 5 as being isolated in the vector "Lambda Zap," the corresponding deposited clone is in "pBluescript."

Vector Used to Construct Library	Corresponding Deposited Plasmid
Lambda Zap	pBluescript (pBS)
Uni-Zap XR	pBluescript (pBS)
Zap Express	pBK
lafmid BA	plafmid BA
pSport1	pSport1
pCMVSport 2.0	pCMVSport 2.0
pCMVSport 3.0	pCMVSport 3.0
pCR®2.1	pCR®2.1

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., Nucleic Acids Res. 16:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., Nucleic Acids Res. 17:9494 (1989)) and pBK (Alting-Mees, M. A. et al., Strategies 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Both can be transformed into E. coli strain XL-1 Blue, also available from Stratagene. pBS comes in 4 forms SK+, SK-, KS+ and KS. The S and K refers to the orientation of the polylinker to the T7 and T3 primer sequences which flank the polylinker region ("S" is for SacI and "K" is for KpnI which are the first sites on each respective end of the linker). "+" or "-" refer to the

orientation of the fl origin of replication ("ori"), such that in one orientation, single stranded rescue initiated from the fl ori generates sense strand DNA and in the other, antisense.

Vectors pSport1, pCMVSport 2.0 and pCMVSport 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into E. coli strain DH10B, also available from Life Technologies. (See, for instance, Gruber, C. E., et al., Focus 15:59 (1993).) Vector lafmid BA (Bento Soares, Columbia University, NY) contains an ampicillin resistance gene and can be transformed into E. coli strain XL-1 Blue. Vector pCR®2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into E. coli strain DH10B, available from Life Technologies. (See, for instance, Clark, J. M., Nuc. Acids Res. 16:9677-9686 (1988) and Mead, D. et al., Bio/Technology 9: (1991).) Preferably, a polynucleotide of the present invention does not comprise the phage vector sequences identified for the particular clone in Table 5, as well as the corresponding plasmid vector sequences designated above.

The deposited material in the sample assigned the ATCC Deposit Number cited by reference to Table 2 and 5 for any given cDNA clone also may contain one or more additional plasmids, each comprising a cDNA clone different from that given clone. Thus, deposits sharing the same ATCC Deposit Number contain at least a plasmid for each cDNA clone referenced in Table 1.

TABLE 5

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HUKA HUKB HUKC HUKD HUKE HUKF HUKG	Human Uterine Cancer	Lambda ZAP II	LP01
HCNA HCNB	Human Colon	Lambda Zap II	LP01
HFFA	Human Fetal Brain, random primed	Lambda Zap II	LP01
HTWA	Resting T-Cell	Lambda ZAP II	LP01
HBQA	Early Stage Human Brain, random primed	Lambda ZAP II	LP01
HLMB HLMF HLMG HLMH HLMI HLMJ HLMM HLMN	breast lymph node CDNA library	Lambda ZAP II	LP01
HCQA HCQB	human colon cancer	Lamda ZAP II	LP01
HMEA HMEC HMED HMEE HMEF HMEG HMEI HMEJ HMEK HMEL	Human Microvascular Endothelial Cells, fract. A	Lambda ZAP II	LP01
HUSA HUSC	Human Umbilical Vein Endothelial Cells, fract. A	Lambda ZAP II	LP01
HLQA HLQB	Hepatocellular Tumor	Lambda ZAP II	LP01
HHGA HHGB HHGC HHGD	Hemangiopericytoma	Lambda ZAP II	LP01
HSDM	Human Striatum Depression, re-rescue	Lambda ZAP II	LP01
HUSH	H Umbilical Vein Endothelial Cells, frac A, re-excision	Lambda ZAP II	LP01
HSGS	Salivary gland, subtracted	Lambda ZAP II	LP01
HFXA HFXB HFXC HFXD HFXE HFXF HFXG HFXH	Brain frontal cortex	Lambda ZAP II	LP01
HPQA HPQB HPQC	PERM TF274	Lambda ZAP II	LP01
HFXJ HFXK	Brain Frontal Cortex, re-excision	Lambda ZAP II	LP01
HCWA HCWB HCWC HCWD HCWE HCWF HCWG HCWH HCWI HCWJ HCWK	CD34 positive cells (Cord Blood)	ZAP Express	LP02
HCUA HCUB HCUC	CD34 depleted Buffy Coat (Cord Blood)	ZAP Express	LP02
HRSM	A-14 cell line	ZAP Express	LP02
HRSA	A1-CELL LINE	ZAP Express	LP02
HCUD HCUE HCUF HCUG HCUH HCUI	CD34 depleted Buffy Coat (Cord Blood), re-excision	ZAP Express	LP02
HBXE HBXF HBXG	H. Whole Brain #2, re-excision	ZAP Express	LP02
HRLM	L8 cell line	ZAP Express	LP02
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP02
HUDA HUDB HUDC	Testes	ZAP Express	LP02
HHTM HHTN HHTO	H. hypothalamus, frac A;re-excision	ZAP Express	LP02
HHTL	H. hypothalamus, frac A	ZAP Express	LP02
HASA HASD	Human Adult Spleen	Uni-ZAP XR	LP03
HFKC HFKD HFKE HFKF HFKG	Human Fetal Kidney	Uni-ZAP XR	LP03
HE8A HE8B HE8C HE8D HE8E HE8F HE8M HE8N	Human 8 Week Whole Embryo	Uni-ZAP XR	LP03
HGBA HGBD HGBE HGBF HGBG HGBH HGBI	Human Gall Bladder	Uni-ZAP XR	LP03
HLHA HLHB HLHC HLHD HLHE	Human Fetal Lung III	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HLHF HLHG HLHH HLHQ			
HPMA HPMB HPMC HPMD HPME HPMF HPMG HPMH	Human Placenta	Uni-ZAP XR	LP03
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP03
HSIA HSIC HSID HSIE	Human Adult Small Intestine	Uni-ZAP XR	LP03
HTEA HTEB HTEC HTED HTEE HTEF HTEG HTEH HTEI HTEJ HTEK	Human Testes	Uni-ZAP XR	LP03
HTPA HTPB HTPC HTPD HTPE	Human Pancreas Tumor	Uni-ZAP XR	LP03
HTTA HTTB HTTC HTTD HTTE HTTF	Human Testes Tumor	Uni-ZAP XR	LP03
HAPA HAPB HAPC HAPM	Human Adult Pulmonary	Uni-ZAP XR	LP03
HETA HETB HETC HETD HETE HETF HETG HETH HETI	Human Endometrial Tumor	Uni-ZAP XR	LP03
HHFB HHFC HHFD HHFE HHFF HHFG HHFH HHFI	Human Fetal Heart	Uni-ZAP XR	LP03
HHPB HHPC HHPD HHPE HHPF HHPG HHPH	Human Hippocampus	Uni-ZAP XR	LP03
HCE1 HCE2 HCE3 HCE4 HCE5 HCEB HCEC HCED HCEE HCEF HCEG	Human Cerebellum	Uni-ZAP XR	LP03
HUVB HUVC HUVD HUVE	Human Umbilical Vein. Endo. remake	Uni-ZAP XR	LP03
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP03
HTAA HTAB HTAC HTAD HTAE	Human Activated T-Cells	Uni-ZAP XR	LP03
HFEA HFEB HFEC	Human Fetal Epithelium (Skin)	Uni-ZAP XR	LP03
HJPA HJPB HJPC HJPD	HUMAN JURKAT MEMBRANE BOUND POLYSOMES	Uni-ZAP XR	LP03
HESA	Human epithelioid sarcoma	Uni-Zap XR	LP03
HLTA HLTB HLTC HLTD HLTE HLTF	Human T-Cell Lymphoma	Uni-ZAP XR	LP03
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP03
HRDA HRDB HRDC HRDD HRDE HRDF	Human Rhabdomyosarcoma	Uni-ZAP XR	LP03
HCAA HCAB HCAC	Cem cells cyclohexamide treated	Uni-ZAP XR	LP03
HRGA HRGB HRGC HRGD	Raji Cells. cyclohexamide treated	Uni-ZAP XR	LP03
HSUA HSUB HSUC HSUM	Supt Cells. cyclohexamide treated	Uni-ZAP XR	LP03
HT4A HT4C HT4D	Activated T-Cells, 12 hrs.	Uni-ZAP XR	LP03
HE9A HE9B HE9C HE9D HE9E HE9F HE9G HE9H HE9M HE9N	Nine Week Old Early Stage Human	Uni-ZAP XR	LP03
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP03
HT5A	Activated T-Cells. 24 hrs.	Uni-ZAP XR	LP03
HFGA HFGM	Human Fetal Brain	Uni-ZAP XR	LP03
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP03
HBGB HBGD	Human Primary Breast Cancer	Uni-ZAP XR	LP03
HBNA HBNB	Human Normal Breast	Uni-ZAP XR	LP03
HCAS	Cem Cells. cyclohexamide treated. subtra	Uni-ZAP XR	LP03
HHPS	Human Hippocampus. subtracted	pBS	LP03
HKCS HKCU	Human Colon Cancer. subtracted	pBS	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HRGS	Raji cells. cyclohexamide treated. subtracted	pBS	LP03
HSUT	Supt cells. cyclohexamide treated. differentially expressed	pBS	LP03
HT4S	Activated T-Cells. 12 hrs. subtracted	Uni-ZAP XR	LP03
HCDA HCDB HCDC HCDD HCDE	Human Chondrosarcoma	Uni-ZAP XR	LP03
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP03
HTLA HTLB HTLC HTLD HTLE HTLF	Human adult testis. large inserts	Uni-ZAP XR	LP03
HLMA HLMC HLMD	Breast Lymph node cDNA library	Uni-ZAP XR	LP03
H6EA H6EB H6EC	HL-60. PMA 4H	Uni-ZAP XR	LP03
HTXA HTXB HTXC HTXD HTXE HTXF HTXG HTXH	Activated T-Cell (12hs)/Thiouridine labelledEco	Uni-ZAP XR	LP03
HNFA HNFB HNFC HNFD HNFE HNFF HNFG HNFH HNFJ	Human Neutrophil. Activated	Uni-ZAP XR	LP03
HTOB HTOC	HUMAN TONSILS. FRACTION 2	Uni-ZAP XR	LP03
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP03
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP03
HORB	Human OB HOS treated (10 nM E2) fraction I	Uni-ZAP XR	LP03
HSVA HSVB HSVC	Human Chronic Synovitis	Uni-ZAP XR	LP03
HROA	HUMAN STOMACH	Uni-ZAP XR	LP03
HBJA HBJB HBJC HBJD HBJE HBJF HBJG HBJH HBJI HBJJ HBJK	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP03
HCRA HCRB HCRC	human corpus colosum	Uni-ZAP XR	LP03
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP03
HDSA	Dermatofibrosarcoma Protuberance	Uni-ZAP XR	LP03
HMWA HMWB HMWC HMWD HMWE HMWF HMWG HMWH HMWI HMWJ	Bone Marrow Cell Line (RS4;11)	Uni-ZAP XR	LP03
HSOA	stomach cancer (human)	Uni-ZAP XR	LP03
HERA	SKIN	Uni-ZAP XR	LP03
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP03
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP03
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP03
HBCA HBCB	H. Lymph node breast Cancer	Uni-ZAP XR	LP03
HPWT	Human Prostate BPH. re-excision	Uni-ZAP XR	LP03
HFVG HFVH HFVI	Fetal Liver. subtraction II	pBS	LP03
HNFI	Human Neutrophils, Activated. re-excision	pBS	LP03
HBMB HBMC HBMD	Human Bone Marrow. re-excision	pBS	LP03
HKML HKMM HKMN	H. Kidney Medulla. re-excision	pBS	LP03
HKIX HKIY	H. Kidney Cortex. subtracted	pBS	LP03
HADT	H. Amygdala Depression. subtracted	pBS	LP03
H6AS	Hl-60. untreated. subtracted	Uni-ZAP XR	LP03
H6ES	HL-60. PMA 4H. subtracted	Uni-ZAP XR	LP03
H6BS	HL-60. RA 4h. Subtracted	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
H6CS	HL-60. PMA 1d. subtracted	Uni-ZAP XR	LP03
HTXJ HTXK	Activated T-cell(12h)/Thiouridine-re-excision	Uni-ZAP XR	LP03
HMSA HMSB HMSC HMSD HMSE HMSF HMSG HMSH HMSI HMSJ HMSK	Monocyte activated	Uni-ZAP XR	LP03
HAGA HAGB HAGC HAGD HAGE HAGF	Human Amygdala	Uni-ZAP XR	LP03
HSRA HSRB HSRE	STROMAL -OSTEOCLASTOMA	Uni-ZAP XR	LP03
HSRD HSRF HSRG HSRH	Human Osteoclastoma Stromal Cells - unamplified	Uni-ZAP XR	LP03
HSQA HSQB HSQC HSQD HSQE HSQF HSQG	Stromal cell TF274	Uni-ZAP XR	LP03
HSKA HSKB HSKC HSKD HSKE HSKF HSKZ	Smooth muscle. serum treated	Uni-ZAP XR	LP03
HSLA HSLB HSLC HSLD HSLE HSLF HSLG	Smooth muscle.control	Uni-ZAP XR	LP03
HSDA HSDD HSDE HSDF HSDG HSDH	Spinal cord	Uni-ZAP XR	LP03
HPWS	Prostate-BPH subtracted II	pBS	LP03
HSKW HSKX HSKY	Smooth Muscle- HASTE normalized	pBS	LP03
HFPB HFPC HFPD	H. Frontal cortex.epileptic:re-excision	Uni-ZAP XR	LP03
HSDI HSDJ HSDK	Spinal Cord. re-excision	Uni-ZAP XR	LP03
HSKN HSKO	Smooth Muscle Serum Treated. Norm	pBS	LP03
HSKG HSKH HSKI	Smooth muscle. serum induced.re-exc	pBS	LP03
HFCA HFCB HFCC HFCD HFCE HFCF	Human Fetal Brain	Uni-ZAP XR	LP04
HPTA HPTB HPTD	Human Pituitary	Uni-ZAP XR	LP04
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP04
HE6B HE6C HE6D HE6E HE6F HE6G HE6S	Human Whole Six Week Old Embryo	Uni-ZAP XR	LP04
HSSA HSSB HSSC HSSD HSSE HSSF HSSG HSSH HSSI HSSJ HSSK	Human Synovial Sarcoma	Uni-ZAP XR	LP04
HE7T	7 Week Old Early Stage Human. subtracted	Uni-ZAP XR	LP04
HEPA HEPB HEPC	Human Epididymus	Uni-ZAP XR	LP04
HSNA HSNB HSNC HSNM HSNN	Human Synovium	Uni-ZAP XR	LP04
HPFB HPFC HPFD HPFE	Human Prostate Cancer. Stage C fraction	Uni-ZAP XR	LP04
HE2A HE2D HE2E HE2H HE2I HE2M HE2N HE2O	12 Week Old Early Stage Human	Uni-ZAP XR	LP04
HE2B HE2C HE2F HE2G HE2P HE2Q	12 Week Old Early Stage Human. II	Uni-ZAP XR	LP04
HPTS HPTT HPTU	Human Pituitary. subtracted	Uni-ZAP XR	LP04
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP04
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP04
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP04
HBSD	Bone Cancer. re-excision	Uni-ZAP XR	LP04
HSGB	Salivary gland. re-excision	Uni-ZAP XR	LP04
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP04
HSXA HSXB HSXC HSXD	Human Substantia Nigra	Uni-ZAP XR	LP04

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HSHA HSHB HSHC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP04
HOUA HOUB HOUC HOUD HOUE	Adipocytes	Uni-ZAP XR	LP04
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP04
HELA HELB HELC HELD HELE HELF HELG HELH	Endothelial cells-control	Uni-ZAP XR	LP04
HEMA HEMB HEMC HEMD HEME HEMF HEMG HEMH	Endothelial-induced	Uni-ZAP XR	LP04
HBIA HBIB HBIC	Human Brain, Striatum	Uni-ZAP XR	LP04
HHSA HHSB HHSC HHSD HHSE	Human Hypothalmus,Schizophrenia	Uni-ZAP XR	LP04
HNGA HNGB HNGC HNGD HNGE HNGF HNGG HNGH HNGI HNGJ	neutrophils control	Uni-ZAP XR	LP04
HNHA HNHB HNHC HNHD HNHE HNHF HNHG HNHH HNHI HNHJ	Neutrophils IL-1 and LPS induced	Uni-ZAP XR	LP04
HSDB HSDC	STRIATUM DEPRESSION	Uni-ZAP XR	LP04
HHPT	Hypothalamus	Uni-ZAP XR	LP04
HSAT HSAU HSAV HSAW HSAX HSAY HSAZ	Anergic T-cell	Uni-ZAP XR	LP04
HBMS HBMT HBMU HBMV HBMW HBMX	Bone marrow	Uni-ZAP XR	LP04
HOEA HOEB HOEC HOED HOEE HOEF HOEJ	Osteoblasts	Uni-ZAP XR	LP04
HAIA HAIB HAIC HAID HAIE HAIF	Epithelial-TNFa and INF induced	Uni-ZAP XR	LP04
HTGA HTGB HTGC HTGD	Apoptotic T-cell	Uni-ZAP XR	LP04
HMCA HMCB HMCC HMCD HMCE	Macrophage-oxLDL	Uni-ZAP XR	LP04
HMAA HMAB HMAC HMAD HMAE HMAF HMAG	Macrophage (GM-CSF treated)	Uni-ZAP XR	LP04
HPHA	Normal Prostate	Uni-ZAP XR	LP04
HPIA HPIB HPIC	LNCAP prostate cell line	Uni-ZAP XR	LP04
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP04
HOSE HOSF HOSG	Human Osteoclastoma, re-excision	Uni-ZAP XR	LP04
HTGE HTGF	Apoptotic T-cell, re-excision	Uni-ZAP XR	LP04
HMAJ HMAK	H Macrophage (GM-CSF treated), re-excision	Uni-ZAP XR	LP04
HACB HACC HACD	Human Adipose Tissue, re-excision	Uni-ZAP XR	LP04
HFPA	H. Frontal Cortex, Epileptic	Uni-ZAP XR	LP04
HFAA HFAB HFAC HFAD HFAE	Alzheimers, spongy change	Uni-ZAP XR	LP04
HFAM	Frontal Lobe, Dementia	Uni-ZAP XR	LP04
HMIA HMIB HMIC	Human Manic Depression Tissue	Uni-ZAP XR	LP04
HTSA HTSE HTSF HTSG HTSH	Human Thymus	pBS	LP05
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBS	LP05
HSAA HSAB HSAC	HSA 172 Cells	pBS	LP05
HSBA HSBB HSBC HSBM	HSC172 cells	pBS	LP05
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBS	LP05
HJBA HJBB HJBC HJBD	Jurkat T-Cell, S phase	pBS	LP05
HAFA HAFB	Aorta endothelial cells + TNF-a	pBS	LP05
HAWA HAWB HAWC	Human White Adipose	pBS	LP05
HTNA HTNB	Human Thyroid	pBS	LP05

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HONA	Normal Ovary, Premenopausal	pBS	LP05
HARA HARB	Human Adult Retina	pBS	LP05
HLJA HLJB	Human Lung	pCMVSport 1	LP06
HOFM HOFN HOFO	H. Ovarian Tumor, II, OV5232	pCMVSport 2.0	LP07
HOGA HOGB HOGC	OV 10-3-95	pCMVSport 2.0	LP07
HCGL	CD34+cells, II	pCMVSport 2.0	LP07
HDLA	Hodgkin's Lymphoma I	pCMVSport 2.0	LP07
HDTA HDTB HDTC HDTD HDTE	Hodgkin's Lymphoma II	pCMVSport 2.0	LP07
HKAA HKAB HKAC HKAD HKAE HKAF HKAG HKAH	Keratinocyte	pCMVSport2.0	LP07
HCIM	CAPFINDER, Crohn's Disease, lib 2	pCMVSport 2.0	LP07
HKAL	Keratinocyte, lib 2	pCMVSport2.0	LP07
HKAT	Keratinocyte, lib 3	pCMVSport2.0	LP07
HNDA	Nasal polyps	pCMVSport2.0	LP07
HDRA	H. Primary Dendritic Cells,lib 3	pCMVSport2.0	LP07
HOHA HOHB HOHC	Human Osteoblasts II	pCMVSport2.0	LP07
HLDA HLDB HLDC	Liver, Hepatoma	pCMVSport3.0	LP08
HLDN HLDO HLDP	Human Liver, normal	pCMVSport3.0	LP08
HMTA	pBMC stimulated w/ poly I/C	pCMVSport3.0	LP08
HNTA	NTERA2, control	pCMVSport3.0	LP08
HDPA HDPB HDPC HDPD HDPF HDPG HDPH HDPI HDPJ HDPK	Primary Dendritic Cells, lib 1	pCMVSport3.0	LP08
HDPM HDPN HDPO HDPP	Primary Dendritic cells,frac 2	pCMVSport3.0	LP08
HMUA HMUB HMUC	Myoloid Progenitor Cell Line	pCMVSport3.0	LP08
HHEA HHEB HHEC HHED	T Cell helper I	pCMVSport3.0	LP08
HHEM HHEN HHEO HHEP	T cell helper II	pCMVSport3.0	LP08
HEQA HEQB HEQC	Human endometrial stromal cells	pCMVSport3.0	LP08
HJMA HJMB	Human endometrial stromal cells-treated with progesterone	pCMVSport3.0	LP08
HSWA HSWB HSWC	Human endometrial stromal cells-treated with estradiol	pCMVSport3.0	LP08
HSYA HSYB HSYC	Human Thymus Stromal Cells	pCMVSport3.0	LP08
HLWA HLWB HLWC	Human Placenta	pCMVSport3.0	LP08
HRAA HRAB HRAC	Rejected Kidney, lib 4	pCMVSport3.0	LP08
HMTM	PCR, pBMC I/C treated	PCRII	LP09
HMJA	H. Meniingima, M6	pSport 1	LP10
HMKA HMKB HMKC HMKD HMKE	H. Meningima, M1	pSport 1	LP10
HUSG HUSI	Human umbilical vein endothelial cells, IL-4 induced	pSport 1	LP10
HUSX HUSY	Human Umbilical Vein Endothelial Cells, uninduced	pSport 1	LP10
HOFA	Ovarian Tumor I, OV5232	pSport 1	LP10
HCFA HCFB HCFC HCFD	T-Cell PHA 16 hrs	pSport 1	LP10
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport 1	LP10
HADA HADC HADD HADE HADF HADG	Human Adipose	pSport 1	LP10

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HOVA HOVB HOVC	Human Ovary	pSport 1	LP10
HTWB HTWC HTWD HTWE HTWF	Resting T-Cell Library.II	pSport 1	LP10
HMMA	Spleen metastic melanoma	pSport 1	LP10
HLYA HLYB HLYC HLYD HLYE	Spleen. Chronic lymphocytic leukemia	pSport 1	LP10
HCGA	CD34+ cell. I	pSport 1	LP10
HEOM HEON	Human Eosinophils	pSport 1	LP10
HTDA	Human Tonsil. Lib 3	pSport 1	LP10
HSPA	Salivary Gland. Lib 2	pSport 1	LP10
HCHA HCHB HCHC	Breast Cancer cell line. MDA 36	pSport 1	LP10
HCHM HCHN	Breast Cancer Cell line. angiogenic	pSport 1	LP10
HCIA	Crohn's Disease	pSport 1	LP10
HDAA HDAB HDAC	HEL cell line	pSport 1	LP10
HABA	Human Astrocyte	pSport 1	LP10
HUFA HUFB HUFC	Ulcerative Colitis	pSport 1	LP10
HNTM	NTERA2 + retinoic acid. 14 days	pSport 1	LP10
HDQA	Primary Dendritic cells.CapFinder2. frac 1	pSport 1	LP10
HDQM	Primary Dendritic Cells. CapFinder. frac 2	pSport 1	LP10
HLDX	Human Liver. normal.CapFinder	pSport 1	LP10
HULA HULB HULC	Human Dermal Endothelial Cells.untreated	pSport1	LP10
HUMA	Human Dermal Endothelial cells.treated	pSport1	LP10
HCJA	Human Stromal Endometrial fibroblasts. untreated	pSport1	LP10
HCJM	Human Stromal endometrial fibroblasts. treated w/ estradiol	pSport1	LP10
HEDA	Human Stromal endometrial fibroblasts. treated with progesterone	pSport1	LP10
HFNA	Human ovary tumor cell OV350721	pSport1	LP10
HKGA HKGB HKGC HKGD	Merkel Cells	pSport1	LP10
HISA HISB HISC	Pancreas Islet Cell Tumor	pSport1	LP10
HLSA	Skin. burned	pSport1	LP10
HBZA	Prostate.BPH. Lib 2	pSport 1	LP10
HBZS	Prostate BPH.Lib 2. subtracted	pSport 1	LP10
HFIA HFIB HFIC	Synovial Fibroblasts (control)	pSport 1	LP10
HFIH HFII HFIJ	Synovial hypoxia	pSport 1	LP10
HFIT HFIU HFIV	Synovial IL-1/TNF stimulated	pSport 1	LP10
HGCA	Messangial cell. frac 1	pSport1	LP10
HMVA HMVB HMVC	Bone Marrow Stromal Cell. untreated	pSport1	LP10
HFIX HFIY HFIZ	Synovial Fibroblasts (Il1/TNF). subt	pSport1	LP10
HFOX HFOY HFOZ	Synovial hypoxia-RSF subtracted	pSport1	LP10
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP11
HLIA HLIB HLIC	Human Liver	pCMVSport 1	LP012
HHBA HHBB HHBC HHBD HHBE	Human Heart	pCMVSport 1	LP012
HBBA HBBB	Human Brain	pCMVSport 1	LP012

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HLJA HLJB HLJC HLJD HLJE	Human Lung	pCMVSport 1	LP012
HOGA HOGB HOGC	Ovarian Tumor	pCMVSport 2.0	LP012
HTJM	Human Tonsils, Lib 2	pCMVSport 2.0	LP012
HAMF HAMG	KMH2	pCMVSport 3.0	LP012
HAJA HAJB HAJC	L428	pCMVSport 3.0	LP012
HWBA HWBB HWBC HWBD HWBE	Dendritic cells, pooled	pCMVSport 3.0	LP012
HWAA HWAB HWAC HWAD HWAE	Human Bone Marrow, treated	pCMVSport 3.0	LP012
HYAA HYAB HYAC	B Cell lymphoma	pCMVSport 3.0	LP012
HWHG HWHH HWHI	Healing groin wound, 6.5 hours post incision	pCMVSport 3.0	LP012
HWHP HWHQ HWHR	Healing groin wound; 7.5 hours post incision	pCMVSport 3.0	LP012
HARM	Healing groin wound - zero hr post-incision (control)	pCMVSport 3.0	LP012
HBIM	Olfactory epithelium; nasalcavity	pCMVSport 3.0	LP012
HWDA	Healing Abdomen wound; 70&90 min post incision	pCMVSport 3.0	LP012
HWEA	Healing Abdomen Wound;15 days post incision	pCMVSport 3.0	LP012
HWJA	Healing Abdomen Wound;21&29 days	pCMVSport 3.0	LP012
HNAL	Human Tongue, frac 2	pSport1	LP012
HMJA	H. Meniingima, M6	pSport1	LP012
HMKA HMKB HMKC HMKD HMKE	H. Meningima, M1	pSport1	LP012
HOFA	Ovarian Tumor I, OV5232	pSport1	LP012
HCFA HCFB HCFC HCFD	T-Cell PHA 16 hrs	pSport1	LP012
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport1	LP012
HMMA HMMB HMMC	Spleen metastic melanoma	pSport1	LP012
HTDA	Human Tonsil, Lib 3	pSport1	LP012
HDBA	Human Fetal Thymus	pSport1	LP012
HDUA	Pericardium	pSport1	LP012
HBZA	Prostate,BPH, Lib 2	pSport1	LP012
HWCA	Larynx tumor	pSport1	LP012
HWKA	Normal lung	pSport1	LP012
HSMB	Bone marrow stroma,treated	pSport1	LP012
HBHM	Normal trachea	pSport1	LP012
HLFC	Human Larynx	pSport1	LP012
HLRB	Siebben Polyposis	pSport1	LP012
HNIA	Mammary Gland	pSport1	LP012
HNJB	Palate carcinoma	pSport1	LP012
HNKA	Palate normal	pSport1	LP012
HMZA	Pharynx carcinoma	pSport1	LP012
HABG	Cheek Carcinoma	pSport1	LP012
HMZM	Pharynx Carcinoma	pSport1	LP012
HDRM	Larynx Carcinoma	pSport1	LP012
HVAA	Pancreas normal PCA4 No	pSport1	LP012
HICA	Tongue carcinoma	pSport1	LP012

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HUKA HUKB HUKC HUKD HUKE	Human Uterine Cancer	Lambda ZAP II	LP013
HFFA	Human Fetal Brain, random primed	Lambda ZAP II	LP013
HTUA	Activated T-cell labeled with 4-thioluri	Lambda ZAP II	LP013
HBQA	Early Stage Human Brain, random primed	Lambda ZAP II	LP013
HMEB	Human microvascular Endothelial cells, fract. B	Lambda ZAP II	LP013
HUSH	Human Umbilical Vein Endothelial cells, fract. A, re-excision	Lambda ZAP II	LP013
HLQC HLQD	Hepatocellular tumor, re-excision	Lambda ZAP II	LP013
HTWJ HTWK HTWL	Resting T-cell, re-excision	Lambda ZAP II	LP013
HF6S	Human Whole 6 week Old Embryo (II), subt	pBluescript	LP013
HHPS	Human Hippocampus, subtracted	pBluescript	LP013
HL1S	LNCAP, differential expression	pBluescript	LP013
HLHS HLHT	Early Stage Human Lung, Subtracted	pBluescript	LP013
HSUS	Supt cells, cyclohexamide treated, subtracted	pBluescript	LP013
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBluescript	LP013
HSDS	H. Striatum Depression, subtracted	pBluescript	LP013
HPTZ	Human Pituitary, Subtracted VII	pBluescript	LP013
HSDX	H. Striatum Depression, subt II	pBluescript	LP013
HSDZ	H. Striatum Depression, subt	pBluescript	LP013
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBluescript SK-	LP013
HRTA	Colorectal Tumor	pBluescript SK-	LP013
HSBA HSBB HSBC HSBM	HSC172 cells	pBluescript SK-	LP013
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBluescript SK-	LP013
HJBA HJBB HJBC HJBD	Jurkat T-cell, S1 phase	pBluescript SK-	LP013
HTNA HTNB	Human Thyroid	pBluescript SK-	LP013
HAHA HAHB	Human Adult Heart	Uni-ZAP XR	LP013
HE6A	Whole 6 week Old Embryo	Uni-ZAP XR	LP013
HFCA HFCB HFCC HFCD HFCE	Human Fetal Brain	Uni-ZAP XR	LP013
HFKC HFKD HFKE HFKF HFKG	Human Fetal Kidney	Uni-ZAP XR	LP013
HGBA HGBD HGBE HGBF HGBG	Human Gall Bladder	Uni-ZAP XR	LP013
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP013
HTEA HTEB HTEC HTED HTEE	Human Testes	Uni-ZAP XR	LP013
HTTA HTTB HTTC HTTD HTTE	Human Testes Tumor	Uni-ZAP XR	LP013
HYBA HYBB	Human Fetal Bone	Uni-ZAP XR	LP013
HFLA	Human Fetal Liver	Uni-ZAP XR	LP013
HHFB HHFC HHFD HHFE HHFF	Human Fetal Heart	Uni-ZAP XR	LP013
HUVB HUVC HUVD HUVE	Human Umbilical Vein, End. remake	Uni-ZAP XR	LP013
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP013
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP013
HTAA HTAB HTAC HTAD HTAE	Human Activated T-cells	Uni-ZAP XR	LP013
HFEA HFEB HFEC	Human Fetal Epithelium (skin)	Uni-ZAP XR	LP013
HJPA HJPB HJPC HJPD	Human Jurkat Membrane Bound Polysomes	Uni-ZAP XR	LP013
HESA	Human Epithelioid Sarcoma	Uni-ZAP XR	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HALS	Human Adult Liver. Subtracted	Uni-ZAP XR	LP013
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP013
HCAA HCAB HCAC	Cem cells. cyclohexamide treated	Uni-ZAP XR	LP013
HRGA HRGB HRGC HRGD	Raji Cells. cyclohexamide treated	Uni-ZAP XR	LP013
HE9A HE9B HE9C HE9D HE9E	Nine Week Old Early Stage Human	Uni-ZAP XR	LP013
HSFA	Human Fibrosarcoma	Uni-ZAP XR	LP013
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP013
HTRA	Human Trachea Tumor	Uni-ZAP XR	LP013
HE2A HE2D HE2E HE2H HE2I	12 Week Old Early Stage Human	Uni-ZAP XR	LP013
HE2B HE2C HE2F HE2G HE2P	12 Week Old Early Stage Human. II	Uni-ZAP XR	LP013
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP013
HBGA	Human Primary Breast Cancer	Uni-ZAP XR	LP013
HPTS HPTT HPTU	Human Pituitary. subtracted	Uni-ZAP XR	LP013
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP013
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP013
HTOA HTOD HTOE HTOF HTOG	human tonsils	Uni-ZAP XR	LP013
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP013
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP013
HOQB	Human OB HOS treated (1 nM E2) fraction I	Uni-ZAP XR	LP013
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP013
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP013
HROA HROC	HUMAN STOMACH	Uni-ZAP XR	LP013
HBJA HBJB HBJC HBJD HBJE	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP013
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP013
HCPA	Corpus Callosum	Uni-ZAP XR	LP013
HSOA	stomach cancer (human)	Uni-ZAP XR	LP013
HERA	SKIN	Uni-ZAP XR	LP013
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP013
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP013
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP013
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP013
HAPN HAPO HAPP HAPQ HAPR	Human Adult Pulmonary;re-excision	Uni-ZAP XR	LP013
HLTG HLTH	Human T-cell lymphoma;re-excision	Uni-ZAP XR	LP013
HAHC HAHD HAHE	Human Adult Heart;re-excision	Uni-ZAP XR	LP013
HAGA HAGB HAGC HAGD HAGE	Human Amygdala	Uni-ZAP XR	LP013
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP013
HSHA HSHB HSHC	Smooth muscle. IL1b induced	Uni-ZAP XR	LP013
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP013
HPIA HPIB HPIC	LNCAP prostate cell line	Uni-ZAP XR	LP013
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP013
HBTA	Bone Marrow Stroma. TNF&LPS ind	Uni-ZAP XR	LP013
HMCF HMCG HMCH HMCI HMCJ	Macrophage-oxLDL; re-excision	Uni-ZAP XR	LP013
HAGG HAGH HAGI	Human Amygdala;re-excision	Uni-ZAP XR	LP013
HACA	H. Adipose Tissue	Uni-ZAP XR	LP013
HKFB	K562 + PMA (36 hrs).re-excision	ZAP Express	LP013
HCWT HCWU HCWV	CD34 positive cells (cord blood).re-ex	ZAP Express	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HBWA	Whole brain	ZAP Express	LP013
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP013
HAVM	Temporal cortex-Alzheizmer	pT-Adv	LP014
HAVT	Hippocampus, Alzheimer Subtracted	pT-Adv	LP014
HHAS	CHME Cell Line	Uni-ZAP XR	LP014
HAJR	Larynx normal	pSport 1	LP014
HWLE HWLF HWLG HWLH	Colon Normal	pSport 1	LP014
HCRM HCRN HCRO	Colon Carcinoma	pSport 1	LP014
HWLI HWLJ HWLK	Colon Normal	pSport 1	LP014
HWLQ HWLR HWLS HWLT	Colon Tumor	pSport 1	LP014
HBFM	Gastrocnemius Muscle	pSport 1	LP014
HBOD HBOE	Quadriceps Muscle	pSport 1	LP014
HBKD HBKE	Soleus Muscle	pSport 1	LP014
HCCM	Pancreatic Langerhans	pSport 1	LP014
HWGA	Larynx carcinoma	pSport 1	LP014
HWGM HWGN	Larynx carcinoma	pSport 1	LP014
HWLA HWLB HWLC	Normal colon	pSport 1	LP014
HWLM HWLN	Colon Tumor	pSport 1	LP014
HVAM HVAN HVAO	Pancreas Tumor	pSport 1	LP014
HWGQ	Larynx carcinoma	pSport 1	LP014
HAQM HAQN	Salivary Gland	pSport 1	LP014
HASM	Stomach; normal	pSport 1	LP014
HBCM	Uterus; normal	pSport 1	LP014
HCDM	Testis; normal	pSport 1	LP014
HDJM	Brain; normal	pSport 1	LP014
HEFM	Adrenal Gland,normal	pSport 1	LP014
HBAA	Rectum normal	pSport 1	LP014
HFDM	Rectum tumour	pSport 1	LP014
HGAM	Colon, normal	pSport 1	LP014
HHMM	Colon, tumour	pSport 1	LP014
HCLB HCLC	Human Lung Cancer	Lambda Zap II	LP015
HRLA	L1 Cell line	ZAP Express	LP015
HHAM	Hypothalamus, Alzheimer's	pCMVSport 3.0	LP015
HKBA	Ku 812F Basophils Line	pSport 1	LP015
HS2S	Saos2, Dexamethosome Treated	pSport 1	LP016
HA5A	Lung Carcinoma A549 TNFalpha activated	pSport 1	LP016
HTFM	TF-1 Cell Line GM-CSF Treated	pSport 1	LP016
HYAS	Thyroid Tumour	pSport 1	LP016
HUTS	Larynx Normal	pSport 1	LP016
HXOA	Larynx Tumor	pSport 1	LP016
HEAH	Ea.hy.926 cell line	pSport 1	LP016
HINA	Adenocarcinoma Human	pSport 1	LP016
HRMA	Lung Mesothelium	pSport 1	LP016
HLCL	Human Pre-Differentiated Adipocytes	Uni-Zap XR	LP017
HS2A	Saos2 Cells	pSport 1	LP020

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HS21	Saos2 Cells: Vitamin D3 Treated	pSport 1	LP020
HUCM	CHME Cell Line, untreated	pSport 1	LP020
HEPN	Aryepiglottis Normal	pSport 1	LP020
HPSN	Sinus Piniformis Tumour	pSport 1	LP020
HNSA	Stomach Normal	pSport 1	LP020
HNSM	Stomach Tumour	pSport 1	LP020
HNLA	Liver Normal Met5No	pSport 1	LP020
HUTA	Liver Tumour Met 5 Tu	pSport 1	LP020
HOCN	Colon Normal	pSport 1	LP020
HOCT	Colon Tumor	pSport 1	LP020
HTNT	Tongue Tumour	pSport 1	LP020
HLXN	Larynx Normal	pSport 1	LP020
HLXT	Larynx Tumour	pSport 1	LP020
HTYN	Thymus	pSport 1	LP020
HPLN	Placenta	pSport 1	LP020
HTNG	Tongue Normal	pSport 1	LP020
HZAA	Thyroid Normal (SDCA2 No)	pSport 1	LP020
HWES	Thyroid Thyroiditis	pSport 1	LP020
HFHD	Ficolled Human Stromal Cells, 5Fu treated	pTrip1Ex2	LP021
HFHM,HFHN	Ficolled Human Stromal Cells, Untreated	pTrip1Ex2	LP021
HPCI	Hep G2 Cells, lambda library	lambda Zap-CMV XR	LP021
HBCA,HBCB,HBCC	H. Lymph node breast Cancer	Uni-ZAP XR	LP021
HCOK	Chondrocytes	pSPORT1	LP022
HDCA, HDCB, HDCC	Dendritic Cells From CD34 Cells	pSPORT1	LP022
HDMA, HDMB	CD40 activated monocyte dendritic cells	pSPORT1	LP022
HDDM, HDDN, HDDO	LPS activated derived dendritic cells	pSPORT1	LP022
HPCR	Hep G2 Cells, PCR library	lambda Zap-CMV XR	LP022
HAAA, HAAB, HAAC	Lung, Cancer (4005313A3): Invasive Poorly Differentiated Lung Adenocarcinoma	pSPORT1	LP022
HIPA, HIPB, HIPC	Lung, Cancer (4005163 B7): Invasive, Poorly Diff. Adenocarcinoma, Metastatic	pSPORT1	LP022
HOOH, HOOI	Ovary, Cancer: (4004562 B6) Papillary Serous Cystic Neoplasm, Low Malignant Pot	pSPORT1	LP022
HIDA	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HUJA,HUJB,HUJC,HUJD,HUJE	B-Cells	pCMVSport 3.0	LP022
HNOA,HNOB,HNOC,HNOD	Ovary, Normal: (9805C040R)	pSPORT1	LP022
HNLM	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HSCL	Stromal Cells	pSPORT1	LP022
HAAX	Lung, Cancer: (4005313 A3) Invasive Poorly-differentiated Metastatic lung adenocarcinoma	pSPORT1	LP022
HUUA,HUUB,HUUC,HUUD	B-cells (unstimulated)	pTrip1Ex2	LP022
HWWA,HWWB,HWWC,HWWD,HWWE,HWWF,HWWG	B-cells (stimulated)	pSPORT1	LP022
HCCC	Colon, Cancer: (9808C064R)	pCMVSport 3.0	LP023

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HPDO HPDP HPDQ HPDR HPD	Ovary. Cancer (9809C332): Poorly differentiated adenocarcinoma	pSport 1	LP023
HPCO HPCP HPCQ HPCT	Ovary. Cancer (15395A1F): Grade II Papillary Carcinoma	pSport 1	LP023
HOCM HOCO HOCP HOCQ	Ovary. Cancer: (15799A1F) Poorly differentiated carcinoma	pSport 1	LP023
HCBM HCBN HCBO	Breast. Cancer: (4004943 A5)	pSport 1	LP023
HNBT HNBU HNBV	Breast. Normal: (4005522B2)	pSport 1	LP023
HBCP HBCQ	Breast. Cancer: (4005522 A2)	pSport 1	LP023
HBCJ	Breast. Cancer: (9806C012R)	pSport 1	LP023
HSAM HSAN	Stromal cells 3.88	pSport 1	LP023
HVCA HVCB HVCC HVCD	Ovary. Cancer: (4004332 A2)	pSport 1	LP023
HSCK HSEN HSEO	Stromal cells (HBM3.18)	pSport 1	LP023
HSCP HSCQ	stromal cell clone 2.5	pSport 1	LP023
HUXA	Breast Cancer: (4005385 A2)	pSport 1	LP023
HCOM HCON HCOO HCOP HCOQ	Ovary. Cancer (4004650 A3): Well-Differentiated Micropapillary Serous Carcinoma	pSport 1	LP023
HBNM	Breast. Cancer: (9802C020E)	pSport 1	LP023
HVVA HVVB HVVC HVVD HVVE	Human Bone Marrow. treated	pSport 1	LP023

Two approaches can be used to isolate a particular clone from the deposited sample of plasmid DNAs cited for that clone in Table 5. First. a plasmid is directly isolated by screening the clones using a polynucleotide probe corresponding to the nucleotide sequence of SEQ ID NO:X.

Particularly, a specific polynucleotide with 30-40 nucleotides is synthesized using an Applied Biosystems DNA synthesizer according to the sequence reported. The oligonucleotide is labeled, for instance, with ^{32}P-γ-ATP using T4 polynucleotide kinase and purified according to routine methods. (E.g., Maniatis et al., Molecular Cloning: A Laboratory Manual. Cold Spring Harbor Press, Cold Spring. NY (1982).) The plasmid mixture is transformed into a suitable host, as indicated above (such as XL-1 Blue (Stratagene)) using techniques known to those of skill in the art, such as those provided by the vector supplier or in related publications or patents cited above. The transformants are plated on 1.5% agar plates (containing the appropriate selection agent, e.g., ampicillin) to a density of about 150 transformants (colonies) per plate. These plates are screened using Nylon membranes according to routine methods for bacterial colony screening (e.g., Sambrook et al., Molecular Cloning: A Laboratory Manual, 2nd Edit., (1989), Cold Spring Harbor Laboratory Press, pages 1.93 to 1.104), or other techniques known to those of skill in the art.

Alternatively, two primers of 17-20 nucleotides derived from both ends of the nucleotide sequence of SEQ ID NO:X are synthesized and used to amplify the desired cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25 μl of reaction mixture with 0.5 ug of the above cDNA template. A convenient reaction mixture is 1.5-5 mM $MgCl_2$, 0.01% (w/v) gelatin, 20 μM each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94°C for 1 min; annealing at 55°C for 1 min; elongation at 72°C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis and the DNA band with expected molecular weight is excised and purified. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product.

Several methods are available for the identification of the 5' or 3' non-coding portions of a gene which may not be present in the deposited clone. These methods include but are not

limited to, filter probing, clone enrichment using specific probes, and protocols similar or identical to 5' and 3' "RACE" protocols which are well known in the art. For instance, a method similar to 5' RACE is available for generating the missing 5' end of a desired full-length transcript. (Fromont-Racine et al., Nucleic Acids Res. 21(7):1683-1684 (1993).)

Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcripts. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest is used to PCR amplify the 5' portion of the desired full-length gene. This amplified product may then be sequenced and used to generate the full length gene.

This above method starts with total RNA isolated from the desired source, although poly-A+ RNA can be used. The RNA preparation can then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase should then be inactivated and the RNA treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase.

This modified RNA preparation is used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction is used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the gene of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the desired gene.

Example 2: Isolation of Genomic Clones Corresponding to a Polynucleotide

A human genomic P1 library (Genomic Systems, Inc.) is screened by PCR using primers selected for the sequence corresponding to SEQ ID NO:X, according to the method described in Example 1. (See also, Sambrook.)

Example 3: Tissue specific expression analysis

The Human Genome Sciences, Inc. (HGS) database is derived from sequencing tissue specific cDNA libraries. Libraries generated from a particular tissue are selected and the specific tissue expression pattern of EST groups or assembled contigs within these libraries is determined by comparison of the expression patterns of those groups or contigs within the entire database. ESTs which show tissue specific expression are selected.

The original clone from which the specific EST sequence was generated, is obtained from the catalogued library of clones and the insert amplified by PCR using methods known in the art. The PCR product is denatured then transferred in 96 well format to a nylon membrane (Schleicher and Scheull) generating an array filter of tissue specific clones. Housekeeping genes, maize genes, and known tissue specific genes are included on the filters. These targets can be used in signal normalization and to validate assay sensitivity. Additional targets are included to monitor probe length and specificity of hybridization.

Radioactively labeled hybridization probes are generated by first strand cDNA synthesis per the manufacturer's instructions (Life Technologies) from mRNA/RNA samples prepared from the specific tissue being analyzed. The hybridization probes are purified by gel exclusion chromatography, quantitated, and hybridized with the array filters in hybridization bottles at 65°C overnight. The filters are washed under stringent conditions and signals are captured using a Fuji phosphorimager.

Data is extracted using AIS software and following background subtraction, signal normalization is performed. This includes a normalization of filter-wide expression levels between different experimental runs. Genes that are differentially expressed in the tissue of interest are identified and the full length sequence of these clones is generated.

Example 4: Chromosomal Mapping of the Polynucleotides

An oligonucleotide primer set is designed according to the sequence at the 5' end of SEQ ID NO:X. This primer preferably spans about 100 nucleotides. This primer set is then used in a polymerase chain reaction under the following set of conditions : 30 seconds, 95°C; 1 minute, 56°C; 1 minute, 70°C. This cycle is repeated 32 times followed by one 5 minute

cycle at 70°C. Human. mouse. and hamster DNA is used as template in addition to a somatic cell hybrid panel containing individual chromosomes or chromosome fragments (Bios. Inc). The reactions is analyzed on either 8% polyacrylamide gels or 3.5 % agarose gels. Chromosome mapping is determined by the presence of an approximately 100 bp PCR fragment in the particular somatic cell hybrid.

Example 5: Bacterial Expression of a Polypeptide

A polynucleotide encoding a polypeptide of the present invention is amplified using PCR oligonucleotide primers corresponding to the 5' and 3' ends of the DNA sequence, as outlined in Example 1, to synthesize insertion fragments. The primers used to amplify the cDNA insert should preferably contain restriction sites. such as BamHI and XbaI, at the 5' end of the primers in order to clone the amplified product into the expression vector. For example, BamHI and XbaI correspond to the restriction enzyme sites on the bacterial expression vector pQE-9. (Qiagen, Inc., Chatsworth, CA). This plasmid vector encodes antibiotic resistance (Amp^r), a bacterial origin of replication (ori), an IPTG-regulatable promoter/operator (P/O), a ribosome binding site (RBS), a 6-histidine tag (6-His), and restriction enzyme cloning sites.

The pQE-9 vector is digested with BamHI and XbaI and the amplified fragment is ligated into the pQE-9 vector maintaining the reading frame initiated at the bacterial RBS. The ligation mixture is then used to transform the E. coli strain M15/rep4 (Qiagen, Inc.) which contains multiple copies of the plasmid pREP4, which expresses the lacI repressor and also confers kanamycin resistance (Kan^r). Transformants are identified by their ability to grow on LB plates and ampicillin/kanamycin resistant colonies are selected. Plasmid DNA is isolated and confirmed by restriction analysis.

Clones containing the desired constructs are grown overnight (O/N) in liquid culture in LB media supplemented with both Amp (100 ug/ml) and Kan (25 ug/ml). The O/N culture is used to inoculate a large culture at a ratio of 1:100 to 1:250. The cells are grown to an optical density 600 ($O.D.^{600}$) of between 0.4 and 0.6. IPTG (Isopropyl-B-D-thiogalacto pyranoside) is then added to a final concentration of 1 mM. IPTG induces by inactivating the lacI repressor. clearing the P/O leading to increased gene expression.

Cells are grown for an extra 3 to 4 hours. Cells are then harvested by centrifugation (20 mins at 6000Xg). The cell pellet is solubilized in the chaotropic agent 6 Molar Guanidine HCl by stirring for 3-4 hours at 4°C. The cell debris is removed by centrifugation, and the supernatant containing the polypeptide is loaded onto a nickel-nitrilo-tri-acetic acid ("Ni-NTA") affinity resin column (available from QIAGEN, Inc., *supra*). Proteins with a 6 x His tag bind to the Ni-NTA resin with high affinity and can be purified in a simple one-step procedure (for details see: The QIAexpressionist (1995) QIAGEN, Inc., *supra*).

Briefly, the supernatant is loaded onto the column in 6 M guanidine-HCl, pH 8, the column is first washed with 10 volumes of 6 M guanidine-HCl, pH 8, then washed with 10 volumes of 6 M guanidine-HCl pH 6, and finally the polypeptide is eluted with 6 M guanidine-HCl, pH 5.

The purified protein is then renatured by dialyzing it against phosphate-buffered saline (PBS) or 50 mM Na-acetate, pH 6 buffer plus 200 mM NaCl. Alternatively, the protein can be successfully refolded while immobilized on the Ni-NTA column. The recommended conditions are as follows: renature using a linear 6M-1M urea gradient in 500 mM NaCl, 20% glycerol, 20 mM Tris/HCl pH 7.4, containing protease inhibitors. The renaturation should be performed over a period of 1.5 hours or more. After renaturation the proteins are eluted by the addition of 250 mM immidazole. Immidazole is removed by a final dialyzing step against PBS or 50 mM sodium acetate pH 6 buffer plus 200 mM NaCl. The purified protein is stored at 4° C or frozen at -80° C.

In addition to the above expression vector, the present invention further includes an expression vector comprising phage operator and promoter elements operatively linked to a polynucleotide of the present invention, called pHE4a. (ATCC Accession Number 209645, deposited on February 25, 1998.) This vector contains: 1) a neomycinphosphotransferase gene as a selection marker, 2) an E. coli origin of replication, 3) a T5 phage promoter sequence, 4) two lac operator sequences, 5) a Shine-Delgarno sequence, and 6) the lactose operon repressor gene (lacIq). The origin of replication (oriC) is derived from pUC19 (LTI, Gaithersburg, MD). The promoter sequence and operator sequences are made synthetically.

DNA can be inserted into the pHEa by restricting the vector with NdeI and XbaI, BamHI, XhoI, or Asp718, running the restricted product on a gel, and isolating the larger fragment (the stuffer fragment should be about 310 base pairs). The DNA insert is generated according to the PCR protocol described in Example 1, using PCR primers having restriction

sites for NdeI (5' primer) and XbaI, BamHI. XhoI, or Asp718 (3' primer). The PCR insert is gel purified and restricted with compatible enzymes. The insert and vector are ligated according to standard protocols.

The engineered vector could easily be substituted in the above protocol to express protein in a bacterial system.

Example 6: Purification of a Polypeptide from an Inclusion Body

The following alternative method can be used to purify a polypeptide expressed in *E coli* when it is present in the form of inclusion bodies. Unless otherwise specified, all of the following steps are conducted at 4-10°C.

Upon completion of the production phase of the *E. coli* fermentation, the cell culture is cooled to 4-10°C and the cells harvested by continuous centrifugation at 15,000 rpm (Heraeus Sepatech). On the basis of the expected yield of protein per unit weight of cell paste and the amount of purified protein required, an appropriate amount of cell paste, by weight, is suspended in a buffer solution containing 100 mM Tris, 50 mM EDTA, pH 7.4. The cells are dispersed to a homogeneous suspension using a high shear mixer.

The cells are then lysed by passing the solution through a microfluidizer (Microfuidics, Corp. or APV Gaulin, Inc.) twice at 4000-6000 psi. The homogenate is then mixed with NaCl solution to a final concentration of 0.5 M NaCl, followed by centrifugation at 7000 xg for 15 min. The resultant pellet is washed again using 0.5M NaCl, 100 mM Tris, 50 mM EDTA, pH 7.4.

The resulting washed inclusion bodies are solubilized with 1.5 M guanidine hydrochloride (GuHCl) for 2-4 hours. After 7000 xg centrifugation for 15 min., the pellet is discarded and the polypeptide containing supernatant is incubated at 4°C overnight to allow further GuHCl extraction.

Following high speed centrifugation (30,000 xg) to remove insoluble particles, the GuHCl solubilized protein is refolded by quickly mixing the GuHCl extract with 20 volumes of buffer containing 50 mM sodium, pH 4.5, 150 mM NaCl, 2 mM EDTA by vigorous stirring. The refolded diluted protein solution is kept at 4°C without mixing for 12 hours prior to further purification steps.

To clarify the refolded polypeptide solution, a previously prepared tangential filtration unit equipped with 0.16 μm membrane filter with appropriate surface area (e.g., Filtron), equilibrated with 40 mM sodium acetate, pH 6.0 is employed. The filtered sample is loaded onto a cation exchange resin (e.g., Poros HS-50, Perseptive Biosystems). The column is washed with 40 mM sodium acetate, pH 6.0 and eluted with 250 mM, 500 mM, 1000 mM, and 1500 mM NaCl in the same buffer, in a stepwise manner. The absorbance at 280 nm of the effluent is continuously monitored. Fractions are collected and further analyzed by SDS-PAGE.

Fractions containing the polypeptide are then pooled and mixed with 4 volumes of water. The diluted sample is then loaded onto a previously prepared set of tandem columns of strong anion (Poros HQ-50, Perseptive Biosystems) and weak anion (Poros CM-20, Perseptive Biosystems) exchange resins. The columns are equilibrated with 40 mM sodium acetate, pH 6.0. Both columns are washed with 40 mM sodium acetate, pH 6.0, 200 mM NaCl. The CM-20 column is then eluted using a 10 column volume linear gradient ranging from 0.2 M NaCl, 50 mM sodium acetate, pH 6.0 to 1.0 M NaCl, 50 mM sodium acetate, pH 6.5. Fractions are collected under constant A_{280} monitoring of the effluent. Fractions containing the polypeptide (determined, for instance, by 16% SDS-PAGE) are then pooled.

The resultant polypeptide should exhibit greater than 95% purity after the above refolding and purification steps. No major contaminant bands should be observed from Commassie blue stained 16% SDS-PAGE gel when 5 μg of purified protein is loaded. The purified protein can also be tested for endotoxin/LPS contamination, and typically the LPS content is less than 0.1 ng/ml according to LAL assays.

Example 7: Cloning and Expression of a Polypeptide in a Baculovirus Expression System

In this example, the plasmid shuttle vector pA2 is used to insert a polynucleotide into a baculovirus to express a polypeptide. This expression vector contains the strong polyhedrin promoter of the *Autographa californica* nuclear polyhedrosis virus (AcMNPV) followed by convenient restriction sites such as BamHI, Xba I and Asp718. The polyadenylation site of the simian virus 40 ("SV40") is used for efficient polyadenylation. For easy selection of recombinant virus, the plasmid contains the beta-galactosidase gene from *E. coli* under control of a weak Drosophila promoter in the same orientation, followed by the

polyadenylation signal of the polyhedrin gene. The inserted genes are flanked on both sides by viral sequences for cell-mediated homologous recombination with wild-type viral DNA to generate a viable virus that express the cloned polynucleotide.

Many other baculovirus vectors can be used in place of the vector above, such as pAc373, pVL941, and pAcIM1, as one skilled in the art would readily appreciate, as long as the construct provides appropriately located signals for transcription, translation, secretion and the like, including a signal peptide and an in-frame AUG as required. Such vectors are described, for instance, in Luckow et al., Virology 170:31-39 (1989).

Specifically, the cDNA sequence contained in the deposited clone, including the AUG initiation codon, is amplified using the PCR protocol described in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the pA2 vector does not need a second signal peptide. Alternatively, the vector can be modified (pA2 GP) to include a baculovirus leader sequence, using the standard methods described in Summers et al., "A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures," Texas Agricultural Experimental Station Bulletin No. 1555 (1987).

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("Geneclean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

The plasmid is digested with the corresponding restriction enzymes and optionally, can be dephosphorylated using calf intestinal phosphatase, using routine procedures known in the art. The DNA is then isolated from a 1% agarose gel using a commercially available kit ("Geneclean" BIO 101 Inc., La Jolla, Ca.).

The fragment and the dephosphorylated plasmid are ligated together with T4 DNA ligase. *E. coli* HB101 or other suitable *E. coli* hosts such as XL-1 Blue (Stratagene Cloning Systems, La Jolla, CA) cells are transformed with the ligation mixture and spread on culture plates. Bacteria containing the plasmid are identified by digesting DNA from individual colonies and analyzing the digestion product by gel electrophoresis. The sequence of the cloned fragment is confirmed by DNA sequencing.

Five μg of a plasmid containing the polynucleotide is co-transfected with 1.0 μg of a commercially available linearized baculovirus DNA ("BaculoGold™ baculovirus DNA", Pharmingen, San Diego, CA), using the lipofection method described by Felgner et al., Proc.

Natl. Acad. Sci. USA 84:7413-7417 (1987). One μg of BaculoGold™ virus DNA and 5 μg of the plasmid are mixed in a sterile well of a microtiter plate containing 50 μl of serum-free Grace's medium (Life Technologies Inc., Gaithersburg, MD). Afterwards, 10 μl Lipofectin plus 90 μl Grace's medium are added, mixed and incubated for 15 minutes at room temperature. Then the transfection mixture is added drop-wise to Sf9 insect cells (ATCC CRL 1711) seeded in a 35 mm tissue culture plate with 1 ml Grace's medium without serum. The plate is then incubated for 5 hours at 27° C. The transfection solution is then removed from the plate and 1 ml of Grace's insect medium supplemented with 10% fetal calf serum is added. Cultivation is then continued at 27° C for four days.

After four days the supernatant is collected and a plaque assay is performed, as described by Summers and Smith, *supra*. An agarose gel with "Blue Gal" (Life Technologies Inc., Gaithersburg) is used to allow easy identification and isolation of gal-expressing clones, which produce blue-stained plaques. (A detailed description of a "plaque assay" of this type can also be found in the user's guide for insect cell culture and baculovirology distributed by Life Technologies Inc., Gaithersburg, page 9-10.) After appropriate incubation, blue stained plaques are picked with the tip of a micropipettor (e.g., Eppendorf). The agar containing the recombinant viruses is then resuspended in a microcentrifuge tube containing 200 μl of Grace's medium and the suspension containing the recombinant baculovirus is used to infect Sf9 cells seeded in 35 mm dishes. Four days later the supernatants of these culture dishes are harvested and then they are stored at 4° C.

To verify the expression of the polypeptide, Sf9 cells are grown in Grace's medium supplemented with 10% heat-inactivated FBS. The cells are infected with the recombinant baculovirus containing the polynucleotide at a multiplicity of infection ("MOI") of about 2. If radiolabeled proteins are desired, 6 hours later the medium is removed and is replaced with SF900 II medium minus methionine and cysteine (available from Life Technologies Inc., Rockville, MD). After 42 hours, 5 μCi of ^{35}S-methionine and 5 μCi ^{35}S-cysteine (available from Amersham) are added. The cells are further incubated for 16 hours and then are harvested by centrifugation. The proteins in the supernatant as well as the intracellular proteins are analyzed by SDS-PAGE followed by autoradiography (if radiolabeled).

Microsequencing of the amino acid sequence of the amino terminus of purified protein may be used to determine the amino terminal sequence of the produced protein.

Example 8: Expression of a Polypeptide in Mammalian Cells

The polypeptide of the present invention can be expressed in a mammalian cell. A typical mammalian expression vector contains a promoter element. which mediates the initiation of transcription of mRNA, a protein coding sequence, and signals required for the termination of transcription and polyadenylation of the transcript. Additional elements include enhancers, Kozak sequences and intervening sequences flanked by donor and acceptor sites for RNA splicing. Highly efficient transcription is achieved with the early and late promoters from SV40, the long terminal repeats (LTRs) from Retroviruses, e.g., RSV, HTLVI, HIVI and the early promoter of the cytomegalovirus (CMV). However, cellular elements can also be used (e.g., the human actin promoter).

Suitable expression vectors for use in practicing the present invention include, for example, vectors such as pSVL and pMSG (Pharmacia, Uppsala, Sweden), pRSVcat (ATCC 37152), pSV2dhfr (ATCC 37146), pBC12MI (ATCC 67109), pCMVSport 2.0, and pCMVSport 3.0. Mammalian host cells that could be used include, human Hela, 293, H9 and Jurkat cells, mouse NIH3T3 and C127 cells, Cos 1, Cos 7 and CV1, quail QC1-3 cells, mouse L cells and Chinese hamster ovary (CHO) cells.

Alternatively, the polypeptide can be expressed in stable cell lines containing the polynucleotide integrated into a chromosome. The co-transfection with a selectable marker such as DHFR, gpt, neomycin, hygromycin allows the identification and isolation of the transfected cells.

The transfected gene can also be amplified to express large amounts of the encoded protein. The DHFR (dihydrofolate reductase) marker is useful in developing cell lines that carry several hundred or even several thousand copies of the gene of interest. (See, e.g., Alt, F. W., et al., J. Biol. Chem. 253:1357-1370 (1978); Hamlin, J. L. and Ma, C., Biochem. et Biophys. Acta, 1097:107-143 (1990); Page, M. J. and Sydenham, M. A., Biotechnology 9:64-68 (1991).) Another useful selection marker is the enzyme glutamine synthase (GS) (Murphy et al., Biochem J. 227:277-279 (1991); Bebbington et al., Bio/Technology 10:169-175 (1992). Using these markers, the mammalian cells are grown in selective medium and the cells with the highest resistance are selected. These cell lines contain the amplified gene(s) integrated into a chromosome. Chinese hamster ovary (CHO) and NSO cells are often used for the production of proteins.

Derivatives of the plasmid pSV2-dhfr (ATCC Accession No. 37146), the expression vectors pC4 (ATCC Accession No. 209646) and pC6 (ATCC Accession No.209647) contain the strong promoter (LTR) of the Rous Sarcoma Virus (Cullen et al., Molecular and Cellular Biology, 438-447 (March, 1985)) plus a fragment of the CMV-enhancer (Boshart et al., Cell 41:521-530 (1985).) Multiple cloning sites, e.g., with the restriction enzyme cleavage sites BamHI, XbaI and Asp718, facilitate the cloning of the gene of interest. The vectors also contain the 3' intron, the polyadenylation and termination signal of the rat preproinsulin gene, and the mouse DHFR gene under control of the SV40 early promoter.

Specifically, the plasmid pC6, for example, is digested with appropriate restriction enzymes and then dephosphorylated using calf intestinal phosphates by procedures known in the art. The vector is then isolated from a 1% agarose gel.

A polynucleotide of the present invention is amplified according to the protocol outlined in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the vector does not need a second signal peptide. Alternatively, if a naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., WO 96/34891.)

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("Geneclean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

The amplified fragment is then digested with the same restriction enzyme and purified on a 1% agarose gel. The isolated fragment and the dephosphorylated vector are then ligated with T4 DNA ligase. *E. coli* HB101 or XL-1 Blue cells are then transformed and bacteria are identified that contain the fragment inserted into plasmid pC6 using, for instance, restriction enzyme analysis.

Chinese hamster ovary cells lacking an active DHFR gene is used for transfection. Five μg of the expression plasmid pC6 or pC4 is cotransfected with 0.5 μg of the plasmid pSVneo using lipofectin (Felgner et al., *supra*). The plasmid pSV2-neo contains a dominant selectable marker, the *neo* gene from Tn5 encoding an enzyme that confers resistance to a group of antibiotics including G418. The cells are seeded in alpha minus MEM supplemented with 1 mg/ml G418. After 2 days, the cells are trypsinized and seeded in hybridoma cloning plates (Greiner, Germany) in alpha minus MEM supplemented with 10, 25, or 50 ng/ml of metothrexate plus 1 mg/ml G418. After about 10-14 days single clones

are trypsinized and then seeded in 6-well petri dishes or 10 ml flasks using different concentrations of methotrexate (50 nM, 100 nM, 200 nM, 400 nM, 800 nM). Clones growing at the highest concentrations of methotrexate are then transferred to new 6-well plates containing even higher concentrations of methotrexate (1 µM, 2 µM, 5 µM, 10 mM, 20 mM). The same procedure is repeated until clones are obtained which grow at a concentration of 100 - 200 µM. Expression of the desired gene product is analyzed, for instance, by SDS-PAGE and Western blot or by reversed phase HPLC analysis.

Example 9: Protein Fusions

The polypeptides of the present invention are preferably fused to other proteins. These fusion proteins can be used for a variety of applications. For example, fusion of the present polypeptides to His-tag, HA-tag, protein A, IgG domains, and maltose binding protein facilitates purification. (See Example 5; see also EP A 394,827; Traunecker, et al., Nature 331:84-86 (1988).) Similarly, fusion to IgG-1, IgG-3, and albumin increases the halflife time in vivo. Nuclear localization signals fused to the polypeptides of the present invention can target the protein to a specific subcellular localization, while covalent heterodimer or homodimers can increase or decrease the activity of a fusion protein. Fusion proteins can also create chimeric molecules having more than one function. Finally, fusion proteins can increase solubility and/or stability of the fused protein compared to the non-fused protein. All of the types of fusion proteins described above can be made by modifying the following protocol, which outlines the fusion of a polypeptide to an IgG molecule, or the protocol described in Example 5.

Briefly, the human Fc portion of the IgG molecule can be PCR amplified, using primers that span the 5' and 3' ends of the sequence described below. These primers also should have convenient restriction enzyme sites that will facilitate cloning into an expression vector, preferably a mammalian expression vector.

For example, if pC4 (Accession No. 209646) is used, the human Fc portion can be ligated into the BamHI cloning site. Note that the 3' BamHI site should be destroyed. Next, the vector containing the human Fc portion is re-restricted with BamHI, linearizing the vector, and a polynucleotide of the present invention, isolated by the PCR protocol described in Example 1, is ligated into this BamHI site. Note that the polynucleotide is cloned without

a stop codon, otherwise a fusion protein will not be produced.

If the naturally occurring signal sequence is used to produce the polypeptide of the present invention, pC4 does not need a second signal peptide. Alternatively, if the naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., WO 96/34891.)

Human IgG Fc region:
GGGATCCGGAGCCCAAATCTTCTGACAAAACTCACACATGCCCACCGTGCCCAG
CACCTGAATTCGAGGGTGCACCGTCAGTCTTCCTCTTCCCCCCAAAACCCAAGGA
CACCCTCATGATCTCCCGGACTCCTGAGGTCACATGCGTGGTGGTGGACGTAAGC
CACGAAGACCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCAT
AATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTC
AGCGTCCTCACCGTCCTGCACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGC
AAGGTCTCCAACAAAGCCCTCCCAACCCCCATCGAGAAAACCATCTCCAAAGCC
AAAGGGCAGCCCCGAGAACCACAGGTGTACACCCTGCCCCCATCCCGGGATGAG
CTGACCAAGAACCAGGTCAGCCTGACCTGCCTGGTCAAAGGCTTCTATCCAAGC
GACATCGCCGTGGAGTGGGAGAGCAATGGGCAGCCGGAGAACAACTACAAGAC
CACGCCTCCCGTGCTGGACTCCGACGGCTCCTTCTTCCTCTACAGCAAGCTCACC
GTGGACAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTCATGCTCCGTGATGCAT
GAGGCTCTGCACAACCACTACACGCAGAAGAGCCTCTCCCTGTCTCCGGGTAAAT
GAGTGCGACGGCCGCGACTCTAGAGGAT (SEQ ID NO:1547)

Example 10: Production of an Antibody from a Polypeptide

a) Hybridoma Technology

The antibodies of the present invention can be prepared by a variety of methods. (See, Current Protocols, Chapter 2.) As one example of such methods, cells expressing polypeptide of the present invention are administered to an animal to induce the production of sera containing polyclonal antibodies. In a preferred method, a preparation of polypeptide of the present invention is prepared and purified to render it substantially free of natural contaminants. Such a preparation is then introduced into an animal in order to produce polyclonal antisera of greater specific activity.

Monoclonal antibodies specific for polypeptide of the present invention are prepared using hybridoma technology. (Kohler et al., Nature 256:495 (1975); Kohler et al., Eur. J. Immunol. 6:511 (1976); Kohler et al., Eur. J. Immunol. 6:292 (1976); Hammerling et al., in: Monoclonal Antibodies and T-Cell Hybridomas, Elsevier, N.Y., pp. 563-681 (1981)). In general, an animal (preferably a mouse) is immunized with polypeptide of the present invention or, more preferably, with a secreted polypeptide of the present invention-expressing cell. Such polypeptide-expressing cells are cultured in any suitable tissue culture medium, preferably in Earle's modified Eagle's medium supplemented with 10% fetal bovine serum (inactivated at about 56°C), and supplemented with about 10 g/l of nonessential amino acids, about 1,000 U/ml of penicillin, and about 100 µg/ml of streptomycin.

The splenocytes of such mice are extracted and fused with a suitable myeloma cell line. Any suitable myeloma cell line may be employed in accordance with the present invention; however, it is preferable to employ the parent myeloma cell line (SP2O), available from the ATCC. After fusion, the resulting hybridoma cells are selectively maintained in HAT medium, and then cloned by limiting dilution as described by Wands et al. (Gastroenterology 80:225-232 (1981)). The hybridoma cells obtained through such a selection are then assayed to identify clones which secrete antibodies capable of binding the polypeptide of the present invention.

Alternatively, additional antibodies capable of binding to polypeptide of the present invention can be produced in a two-step procedure using anti-idiotypic antibodies. Such a method makes use of the fact that antibodies are themselves antigens, and therefore, it is possible to obtain an antibody which binds to a second antibody. In accordance with this method, protein specific antibodies are used to immunize an animal, preferably a mouse. The splenocytes of such an animal are then used to produce hybridoma cells, and the hybridoma cells are screened to identify clones which produce an antibody whose ability to bind to the polypeptide of the present invention-specific antibody can be blocked by polypeptide of the present invention. Such antibodies comprise anti-idiotypic antibodies to the polypeptide of the present invention-specific antibody and are used to immunize an animal to induce formation of further polypeptide of the present invention-specific antibodies.

For in vivo use of antibodies in humans, an antibody is "humanized". Such antibodies can be produced using genetic constructs derived from hybridoma cells producing the monoclonal antibodies described above. Methods for producing chimeric and humanized

antibodies are known in the art and are discussed herein. (See, for review. Morrison. Science 229:1202 (1985): Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., WO 8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985).)

b) Isolation Of Antibody Fragments Directed Against Polypeptide of the Present Invention From A Library Of scFvs

Naturally occurring V-genes isolated from human PBLs are constructed into a library of antibody fragments which contain reactivities against polypeptide of the present invention to which the donor may or may not have been exposed (see e.g., U.S. Patent 5,885,793 incorporated herein by reference in its entirety).

Rescue of the Library. A library of scFvs is constructed from the RNA of human PBLs as described in PCT publication WO 92/01047. To rescue phage displaying antibody fragments, approximately 109 E. coli harboring the phagemid are used to inoculate 50 ml of 2xTY containing 1% glucose and 100 µg/ml of ampicillin (2xTY-AMP-GLU) and grown to an O.D. of 0.8 with shaking. Five ml of this culture is used to innoculate 50 ml of 2xTY-AMP-GLU, 2 x 108 TU of delta gene 3 helper (M13 delta gene III, see PCT publication WO 92/01047) are added and the culture incubated at 37°C for 45 minutes without shaking and then at 37°C for 45 minutes with shaking. The culture is centrifuged at 4000 r.p.m. for 10 min. and the pellet resuspended in 2 liters of 2xTY containing 100 µg/ml ampicillin and 50 ug/ml kanamycin and grown overnight. Phage are prepared as described in PCT publication WO 92/01047.

M13 delta gene III is prepared as follows: M13 delta gene III helper phage does not encode gene III protein, hence the phage(mid) displaying antibody fragments have a greater avidity of binding to antigen. Infectious M13 delta gene III particles are made by growing the helper phage in cells harboring a pUC19 derivative supplying the wild type gene III protein during phage morphogenesis. The culture is incubated for 1 hour at 37° C without shaking and then for a further hour at 37°C with shaking. Cells are spun down (IEC-Centra 8,400 r.p.m. for 10 min), resuspended in 300 ml 2xTY broth containing 100 µg ampicillin/ml and 25 µg kanamycin/ml (2xTY-AMP-KAN) and grown overnight, shaking at 37°C. Phage particles are purified and concentrated from the culture medium by two PEG-precipitations

(Sambrook et al.. 1990). resuspended in 2 ml PBS and passed through a 0.45 μm filter (Minisart NML; Sartorius) to give a final concentration of approximately 1013 transducing units/ml (ampicillin-resistant clones).

Panning of the Library. Immunotubes (Nunc) are coated overnight in PBS with 4 ml of either 100 μg/ml or 10 μg/ml of a polypeptide of the present invention. Tubes are blocked with 2% Marvel-PBS for 2 hours at 37°C and then washed 3 times in PBS. Approximately 1013 TU of phage is applied to the tube and incubated for 30 minutes at room temperature tumbling on an over and under turntable and then left to stand for another 1.5 hours. Tubes are washed 10 times with PBS 0.1% Tween-20 and 10 times with PBS. Phage are eluted by adding 1 ml of 100 mM triethylamine and rotating 15 minutes on an under and over turntable after which the solution is immediately neutralized with 0.5 ml of 1.0M Tris-HCl, pH 7.4. Phage are then used to infect 10 ml of mid-log E. coli TG1 by incubating eluted phage with bacteria for 30 minutes at 37°C. The E. coli are then plated on TYE plates containing 1% glucose and 100 μg/ml ampicillin. The resulting bacterial library is then rescued with delta gene 3 helper phage as described above to prepare phage for a subsequent round of selection. This process is then repeated for a total of 4 rounds of affinity purification with tube-washing increased to 20 times with PBS, 0.1% Tween-20 and 20 times with PBS for rounds 3 and 4.

Characterization of Binders. Eluted phage from the 3rd and 4th rounds of selection are used to infect E. coli HB 2151 and soluble scFv is produced (Marks, et al., 1991) from single colonies for assay. ELISAs are performed with microtitre plates coated with either 10 pg/ml of the polypeptide of the present invention in 50 mM bicarbonate pH 9.6. Clones positive in ELISA are further characterized by PCR fingerprinting (see, e.g., PCT publication WO 92/01047) and then by sequencing. These ELISA positive clones may also be further characterized by techniques known in the art, such as, for example, epitope mapping, binding affinity, receptor signal transduction, ability to block or competitively inhibit antibody/antigen binding, and competitive agonistic or antagonistic activity.

Example 11: Method of Determining Alterations in a Gene Corresponding to a Polynucleotide

RNA isolated from entire families or individual patients presenting with a phenotype of interest (such as a disease) is be isolated. cDNA is then generated from these RNA

samples using protocols known in the art. (See, Sambrook.) The cDNA is then used as a template for PCR, employing primers surrounding regions of interest in SEQ ID NO:X; and/or the nucleotide sequence of the related cDNA in the cDNA clone contained in a deposited library. Suggested PCR conditions consist of 35 cycles at 95 degrees C for 30 seconds; 60-120 seconds at 52-58 degrees C; and 60-120 seconds at 70 degrees C, using buffer solutions described in Sidransky et al., Science 252:706 (1991).

PCR products are then sequenced using primers labeled at their 5' end with T4 polynucleotide kinase, employing SequiTherm Polymerase. (Epicentre Technologies). The intron-exon borders of selected exons is also determined and genomic PCR products analyzed to confirm the results. PCR products harboring suspected mutations is then cloned and sequenced to validate the results of the direct sequencing.

PCR products is cloned into T-tailed vectors as described in Holton et al., Nucleic Acids Research, 19:1156 (1991) and sequenced with T7 polymerase (United States Biochemical). Affected individuals are identified by mutations not present in unaffected individuals.

Genomic rearrangements are also observed as a method of determining alterations in a gene corresponding to a polynucleotide. Genomic clones isolated according to Example 2 are nick-translated with digoxigenindeoxy-uridine 5'-triphosphate (Boehringer Manheim), and FISH performed as described in Johnson et al., Methods Cell Biol. 35:73-99 (1991). Hybridization with the labeled probe is carried out using a vast excess of human cot-1 DNA for specific hybridization to the corresponding genomic locus.

Chromosomes are counterstained with 4,6-diamino-2-phenylidole and propidium iodide, producing a combination of C- and R-bands. Aligned images for precise mapping are obtained using a triple-band filter set (Chroma Technology, Brattleboro, VT) in combination with a cooled charge-coupled device camera (Photometrics, Tucson, AZ) and variable excitation wavelength filters. (Johnson et al., Genet. Anal. Tech. Appl., 8:75 (1991).) Image collection, analysis and chromosomal fractional length measurements are performed using the ISee Graphical Program System. (Inovision Corporation, Durham, NC.) Chromosome alterations of the genomic region hybridized by the probe are identified as insertions, deletions, and translocations. These alterations are used as a diagnostic marker for an associated disease.

Example 12: Method of Detecting Abnormal Levels of a Polypeptide in a Biological Sample

A polypeptide of the present invention can be detected in a biological sample, and if an increased or decreased level of the polypeptide is detected, this polypeptide is a marker for a particular phenotype. Methods of detection are numerous, and thus, it is understood that one skilled in the art can modify the following assay to fit their particular needs.

For example, antibody-sandwich ELISAs are used to detect polypeptides in a sample, preferably a biological sample. Wells of a microtiter plate are coated with specific antibodies, at a final concentration of 0.2 to 10 ug/ml. The antibodies are either monoclonal or polyclonal and are produced by the method described in Example 10. The wells are blocked so that non-specific binding of the polypeptide to the well is reduced.

The coated wells are then incubated for > 2 hours at RT with a sample containing the polypeptide. Preferably, serial dilutions of the sample should be used to validate results. The plates are then washed three times with deionized or distilled water to remove unbounded polypeptide.

Next, 50 ul of specific antibody-alkaline phosphatase conjugate, at a concentration of 25-400 ng, is added and incubated for 2 hours at room temperature. The plates are again washed three times with deionized or distilled water to remove unbounded conjugate.

Add 75 ul of 4-methylumbelliferyl phosphate (MUP) or p-nitrophenyl phosphate (NPP) substrate solution to each well and incubate 1 hour at room temperature. Measure the reaction by a microtiter plate reader. Prepare a standard curve, using serial dilutions of a control sample, and plot polypeptide concentration on the X-axis (log scale) and fluorescence or absorbance of the Y-axis (linear scale). Interpolate the concentration of the polypeptide in the sample using the standard curve.

Example 13: Formulation

The invention also provides methods of treatment and/or prevention of diseases or disorders (such as, for example, any one or more of the diseases or disorders disclosed herein) by administration to a subject of an effective amount of a Therapeutic. By therapeutic is meant a polynucleotides or polypeptides of the invention (including fragments and variants), agonists or antagonists thereof, and/or antibodies thereto, in combination with

a pharmaceutically acceptable carrier type (e.g., a sterile carrier).

The Therapeutic will be formulated and dosed in a fashion consistent with good medical practice, taking into account the clinical condition of the individual patient (especially the side effects of treatment with the Therapeutic alone), the site of delivery, the method of administration, the scheduling of administration, and other factors known to practitioners. The "effective amount" for purposes herein is thus determined by such considerations.

As a general proposition, the total pharmaceutically effective amount of the Therapeutic administered parenterally per dose will be in the range of about 1ug/kg/day to 10 mg/kg/day of patient body weight, although, as noted above, this will be subject to therapeutic discretion. More preferably, this dose is at least 0.01 mg/kg/day, and most preferably for humans between about 0.01 and 1 mg/kg/day for the hormone. If given continuously, the Therapeutic is typically administered at a dose rate of about 1 ug/kg/hour to about 50 ug/kg/hour, either by 1-4 injections per day or by continuous subcutaneous infusions, for example, using a mini-pump. An intravenous bag solution may also be employed. The length of treatment needed to observe changes and the interval following treatment for responses to occur appears to vary depending on the desired effect.

Therapeutics can be are administered orally, rectally, parenterally, intracistemally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), bucally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics are administered orally, rectally, parenterally, intracistemally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), bucally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any type. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics include suitable polymeric materials (such as, for example, semi-permeable polymer matrices in the form of shaped articles, e.g., films, or mirocapsules), suitable hydrophobic materials (for example as an emulsion in an acceptable oil) or ion exchange resins, and sparingly soluble derivatives (such as, for example, a sparingly soluble salt).

Sustained-release matrices include polylactides (U.S. Pat. No. 3,773,919, EP 58,481), copolymers of L-glutamic acid and gamma-ethyl-L-glutamate (Sidman et al., Biopolymers 22:547-556 (1983)), poly (2- hydroxyethyl methacrylate) (Langer et al., J. Biomed. Mater. Res. 15:167-277 (1981), and Langer, Chem. Tech. 12:98-105 (1982)), ethylene vinyl acetate (Langer et al., Id.) or poly-D- (-)-3-hydroxybutyric acid (EP 133,988).

Sustained-release Therapeutics also include liposomally entrapped Therapeutics of the invention (*see* generally, Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 317 -327 and 353-365 (1989)). Liposomes containing the Therapeutic are prepared by methods known per se: DE 3,218,121; Epstein et al., Proc. Natl. Acad. Sci. (USA) 82:3688-3692 (1985); Hwang et al., Proc. Natl. Acad. Sci.(USA) 77:4030-4034 (1980); EP 52,322; EP 36,676; EP 88,046; EP 143,949; EP 142,641; Japanese Pat. Appl. 83-118008; U.S. Pat. Nos. 4,485,045 and 4,544,545; and EP 102,324. Ordinarily, the liposomes are of the small (about 200-800 Angstroms) unilamellar type in which the lipid content is greater than about 30 mol. percent cholesterol, the selected proportion being adjusted for the optimal Therapeutic.

In yet an additional embodiment, the Therapeutics of the invention are delivered by way of a pump (*see* Langer, *supra*; Sefton, CRC Crit. Ref. Biomed. Eng. 14:201 (1987); Buchwald et al., Surgery 88:507 (1980); Saudek et al., N. Engl. J. Med. 321:574 (1989)).

Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

For parenteral administration, in one embodiment, the Therapeutic is formulated generally by mixing it at the desired degree of purity, in a unit dosage injectable form (solution, suspension, or emulsion), with a pharmaceutically acceptable carrier, i.e., one that is non-toxic to recipients at the dosages and concentrations employed and is compatible with other ingredients of the formulation. For example, the formulation preferably does not

include oxidizing agents and other compounds that are known to be deleterious to the Therapeutic.

Generally, the formulations are prepared by contacting the Therapeutic uniformly and intimately with liquid carriers or finely divided solid carriers or both. Then, if necessary, the product is shaped into the desired formulation. Preferably the carrier is a parenteral carrier, more preferably a solution that is isotonic with the blood of the recipient. Examples of such carrier vehicles include water, saline, Ringer's solution, and dextrose solution. Non-aqueous vehicles such as fixed oils and ethyl oleate are also useful herein, as well as liposomes.

The carrier suitably contains minor amounts of additives such as substances that enhance isotonicity and chemical stability. Such materials are non-toxic to recipients at the dosages and concentrations employed, and include buffers such as phosphate, citrate, succinate, acetic acid, and other organic acids or their salts; antioxidants such as ascorbic acid; low molecular weight (less than about ten residues) polypeptides, e.g., polyarginine or tripeptides; proteins, such as serum albumin, gelatin, or immunoglobulins; hydrophilic polymers such as polyvinylpyrrolidone; amino acids, such as glycine, glutamic acid, aspartic acid, or arginine; monosaccharides, disaccharides, and other carbohydrates including cellulose or its derivatives, glucose, manose, or dextrins; chelating agents such as EDTA; sugar alcohols such as mannitol or sorbitol; counterions such as sodium; and/or nonionic surfactants such as polysorbates, poloxamers, or PEG.

The Therapeutic is typically formulated in such vehicles at a concentration of about 0.1 mg/ml to 100 mg/ml, preferably 1-10 mg/ml, at a pH of about 3 to 8. It will be understood that the use of certain of the foregoing excipients, carriers, or stabilizers will result in the formation of polypeptide salts.

Any pharmaceutical used for therapeutic administration can be sterile. Sterility is readily accomplished by filtration through sterile filtration membranes (e.g., 0.2 micron membranes). Therapeutics generally are placed into a container having a sterile access port, for example, an intravenous solution bag or vial having a stopper pierceable by a hypodermic injection needle.

Therapeutics ordinarily will be stored in unit or multi-dose containers, for example, sealed ampoules or vials, as an aqueous solution or as a lyophilized formulation for reconstitution. As an example of a lyophilized formulation, 10-ml vials are filled with 5 ml of sterile-filtered 1% (w/v) aqueous Therapeutic solution, and the resulting mixture is

lyophilized. The infusion solution is prepared by reconstituting the lyophilized Therapeutic using bacteriostatic Water-for-Injection.

The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the Therapeutics of the invention. Associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration. In addition, the Therapeutics may be employed in conjunction with other therapeutic compounds.

The Therapeutics of the invention may be administered alone or in combination with adjuvants. Adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, alum, alum plus deoxycholate (ImmunoAg), MTP-PE (Biocine Corp.), QS21 (Genentech, Inc.), BCG, and MPL. In a specific embodiment, Therapeutics of the invention are administered in combination with alum. In another specific embodiment, Therapeutics of the invention are administered in combination with QS-21. Further adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, Monophosphoryl lipid immunomodulator, AdjuVax 100a, QS-21, QS-18, CRL1005, Aluminum salts, MF-59, and Virosomal adjuvant technology. Vaccines that may be administered with the Therapeutics of the invention include, but are not limited to, vaccines directed toward protection against MMR (measles, mumps, rubella), polio, varicella, tetanus/diptheria, hepatitis A, hepatitis B, haemophilus influenzae B, whooping cough, pneumonia, influenza, Lyme's Disease, rotavirus, cholera, yellow fever, Japanese encephalitis, poliomyelitis, rabies, typhoid fever, and pertussis. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

The Therapeutics of the invention may be administered alone or in combination with other therapeutic agents. Therapeutic agents that may be administered in combination with the Therapeutics of the invention, include but not limited to, other members of the TNF

family, chemotherapeutic agents, antibiotics, steroidal and non-steroidal anti-inflammatories. conventional immunotherapeutic agents, cytokines and/or growth factors. Combinations may be administered either concomitantly, e.g., as an admixture. separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

In one embodiment, the Therapeutics of the invention are administered in combination with members of the TNF family. TNF, TNF-related or TNF-like molecules that may be administered with the Therapeutics of the invention include, but are not limited to, soluble forms of TNF-alpha, lymphotoxin-alpha (LT-alpha, also known as TNF-beta), LT-beta (found in complex heterotrimer LT-alpha2-beta), OPGL, FasL, CD27L, CD30L, CD40L, 4-1BBL, DcR3, OX40L, TNF-gamma (International Publication No. WO 96/14328), AIM-I (International Publication No. WO 97/33899), endokine-alpha (International Publication No. WO 98/07880), TR6 (International Publication No. WO 98/30694), OPG, and neutrokine-alpha (International Publication No. WO 98/18921, OX40, and nerve growth factor (NGF), and soluble forms of Fas, CD30, CD27, CD40 and 4-IBB, TR2 (International Publication No. WO 96/34095), DR3 (International Publication No. WO 97/33904), DR4 (International Publication No. WO 98/32856), TR5 (International Publication No. WO 98/30693), TR6 (International Publication No. WO 98/30694), TR7 (International Publication No. WO 98/41629), TRANK, TR9 (International Publication No. WO 98/56892).TR10 (International Publication No. WO 98/54202), 312C2 (International Publication No. WO 98/06842), and TR12, and soluble forms CD154, CD70, and CD153.

In certain embodiments, Therapeutics of the invention are administered in combination with antiretroviral agents, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors. Nucleoside reverse transcriptase inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, RETROVIR™ (zidovudine/AZT), VIDEX™ (didanosine/ddI), HIVID™ (zalcitabine/ddC), ZERIT™ (stavudine/d4T), EPIVIR™ (lamivudine/3TC), and COMBIVIR™ (zidovudine/lamivudine). Non-nucleoside reverse transcriptase inhibitors that may be administered in combination with the Therapeutics of the

invention. include. but are not limited to. VIRAMUNE™ (nevirapine). RESCRIPTOR™ (delavirdine). and SUSTIVA™ (efavirenz). Protease inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, CRIXIVAN™ (indinavir), NORVIR™ (ritonavir), INVIRASE™ (saquinavir), and VIRACEPT™ (nelfinavir). In a specific embodiment, antiretroviral agents, nucleoside reverse transcriptase inhibitors. non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors may be used in any combination with Therapeutics of the invention to treat AIDS and/or to prevent or treat HIV infection.

In other embodiments, Therapeutics of the invention may be administered in combination with anti-opportunistic infection agents. Anti-opportunistic agents that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, ATOVAQUONE™, ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, ETHAMBUTOL™, RIFABUTIN™, CLARITHROMYCIN™, AZITHROMYCIN™, GANCICLOVIR™, FOSCARNET™, CIDOFOVIR™, FLUCONAZOLE™, ITRACONAZOLE™, KETOCONAZOLE™, ACYCLOVIR™, FAMCICOLVIR™, PYRIMETHAMINE™, LEUCOVORIN™, NEUPOGEN™ (filgrastim/G-CSF), and LEUKINE™ (sargramostim/GM-CSF). In a specific embodiment, Therapeutics of the invention are used in any combination with TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, and/or ATOVAQUONE™ to prophylactically treat or prevent an opportunistic *Pneumocystis carinii* pneumonia infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, and/or ETHAMBUTOL™ to prophylactically treat or prevent an opportunistic *Mycobacterium avium* complex infection. In another specific embodiment, Therapeutics of the invention are used in any combination with RIFABUTIN™, CLARITHROMYCIN™, and/or AZITHROMYCIN™ to prophylactically treat or prevent an opportunistic *Mycobacterium tuberculosis* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with GANCICLOVIR™, FOSCARNET™. and/or CIDOFOVIR™ to prophylactically treat or prevent an opportunistic cytomegalovirus infection. In another specific embodiment, Therapeutics of the invention are used in any combination with FLUCONAZOLE™, ITRACONAZOLE™, and/or

KETOCONAZOLE™ to prophylactically treat or prevent an opportunistic fungal infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ACYCLOVIR™ and/or FAMCICOLVIR™ to prophylactically treat or prevent an opportunistic herpes simplex virus type I and/or type II infection. In another specific embodiment, Therapeutics of the invention are used in any combination with PYRIMETHAMINE™ and/or LEUCOVORIN™ to prophylactically treat or prevent an opportunistic *Toxoplasma gondii* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with LEUCOVORIN™ and/or NEUPOGEN™ to prophylactically treat or prevent an opportunistic bacterial infection.

In a further embodiment, the Therapeutics of the invention are administered in combination with an antiviral agent. Antiviral agents that may be administered with the Therapeutics of the invention include, but are not limited to, acyclovir, ribavirin, amantadine, and remantidine.

In a further embodiment, the Therapeutics of the invention are administered in combination with an antibiotic agent. Antibiotic agents that may be administered with the Therapeutics of the invention include, but are not limited to, amoxicillin, beta-lactamases, aminoglycosides, beta-lactam (glycopeptide), beta-lactamases, Clindamycin, chloramphenicol, cephalosporins, ciprofloxacin, ciprofloxacin, erythromycin, fluoroquinolones, macrolides, metronidazole, penicillins, quinolones, rifampin, streptomycin, sulfonamide, tetracyclines, trimethoprim, trimethoprim-sulfamthoxazole, and vancomycin.

Conventional nonspecific immunosuppressive agents, that may be administered in combination with the Therapeutics of the invention include, but are not limited to, steroids, cyclosporine, cyclosporine analogs, cyclophosphamide methylprednisone, prednisone, azathioprine, FK-506, 15-deoxyspergualin, and other immunosuppressive agents that act by suppressing the function of responding T cells.

In specific embodiments, Therapeutics of the invention are administered in combination with immunosuppressants. Immunosuppressants preparations that may be administered with the Therapeutics of the invention include, but are not limited to, ORTHOCLONE™ (OKT3), SANDIMMUNE™/NEORAL™/SANGDYA™ (cyclosporin), PROGRAF™ (tacrolimus), CELLCEPT™ (mycophenolate), Azathioprine, glucorticosteroids, and RAPAMUNE™ (sirolimus). In a specific embodiment, immunosuppressants may be

used to prevent rejection of organ or bone marrow transplantation.

In an additional embodiment, Therapeutics of the invention are administered alone or in combination with one or more intravenous immune globulin preparations. Intravenous immune globulin preparations that may be administered with the Therapeutics of the invention include, but not limited to, GAMMAR™, IVEEGAM™, SANDOGLOBULIN™, GAMMAGARD S/D™, and GAMIMUNE™. In a specific embodiment, Therapeutics of the invention are administered in combination with intravenous immune globulin preparations in transplantation therapy (e.g., bone marrow transplant).

In an additional embodiment, the Therapeutics of the invention are administered alone or in combination with an anti-inflammatory agent. Anti-inflammatory agents that may be administered with the Therapeutics of the invention include, but are not limited to, glucocorticoids and the nonsteroidal anti-inflammatories, aminoarylcarboxylic acid derivatives, arylacetic acid derivatives, arylbutyric acid derivatives, arylcarboxylic acids, arylpropionic acid derivatives, pyrazoles, pyrazolones, salicylic acid derivatives, thiazinecarboxamides, e-acetamidocaproic acid, S-adenosylmethionine, 3-amino-4-hydroxybutyric acid, amixetrine, bendazac, benzydamine, bucolome, difenpiramide, ditazol, emorfazone, guaiazulene, nabumetone, nimesulide, orgotein, oxaceprol, paranyline, perisoxal, pifoxime, proquazone, proxazole, and tenidap.

In another embodiment, compostions of the invention are administered in combination with a chemotherapeutic agent. Chemotherapeutic agents that may be administered with the Therapeutics of the invention include, but are not limited to, antibiotic derivatives (e.g., doxorubicin, bleomycin, daunorubicin, and dactinomycin); antiestrogens (e.g., tamoxifen); antimetabolites (e.g., fluorouracil, 5-FU, methotrexate, floxuridine, interferon alpha-2b, glutamic acid, plicamycin, mercaptopurine, and 6-thioguanine); cytotoxic agents (e.g., carmustine, BCNU, lomustine, CCNU, cytosine arabinoside, cyclophosphamide, estramustine, hydroxyurea, procarbazine, mitomycin, busulfan, cis-platin, and vincristine sulfate); hormones (e.g., medroxyprogesterone, estramustine phosphate sodium, ethinyl estradiol, estradiol, megestrol acetate, methyltestosterone, diethylstilbestrol diphosphate, chlorotrianisene, and testolactone); nitrogen mustard derivatives (e.g., mephalen, chorambucil, mechlorethamine (nitrogen mustard) and thiotepa); steroids and combinations (e.g., bethamethasone sodium phosphate); and others (e.g., dicarbazine, asparaginase, mitotane, vincristine sulfate, vinblastine sulfate, and etoposide).

In a specific embodiment, Therapeutics of the invention are administered in combination with CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) or any combination of the components of CHOP. In another embodiment, Therapeutics of the invention are administered in combination with Rituximab. In a further embodiment, Therapeutics of the invention are administered with Rituxmab and CHOP, or Rituxmab and any combination of the components of CHOP.

In an additional embodiment, the Therapeutics of the invention are administered in combination with cytokines. Cytokines that may be administered with the Therapeutics of the invention include, but are not limited to, IL2, IL3, IL4, IL5, IL6, IL7, IL10, IL12, IL13, IL15, anti-CD40, CD40L, IFN-gamma and TNF-alpha. In another embodiment, Therapeutics of the invention may be administered with any interleukin, including, but not limited to, IL-1alpha, IL-1beta, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-19, IL-20, and IL-21.

In an additional embodiment, the Therapeutics of the invention are administered in combination with angiogenic proteins. Angiogenic proteins that may be administered with the Therapeutics of the invention include, but are not limited to, Glioma Derived Growth Factor (GDGF), as disclosed in European Patent Number EP-399816; Platelet Derived Growth Factor-A (PDGF-A), as disclosed in European Patent Number EP-682110; Platelet Derived Growth Factor-B (PDGF-B), as disclosed in European Patent Number EP-282317; Placental Growth Factor (PIGF), as disclosed in International Publication Number WO 92/06194; Placental Growth Factor-2 (PIGF-2), as disclosed in Hauser et al., Gorwth Factors, 4:259-268 (1993); Vascular Endothelial Growth Factor (VEGF), as disclosed in International Publication Number WO 90/13649; Vascular Endothelial Growth Factor-A (VEGF-A), as disclosed in European Patent Number EP-506477; Vascular Endothelial Growth Factor-2 (VEGF-2), as disclosed in International Publication Number WO 96/39515; Vascular Endothelial Growth Factor B (VEGF-3); Vascular Endothelial Growth Factor B-186 (VEGF-B186), as disclosed in International Publication Number WO 96/26736; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/02543; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/07832; and Vascular Endothelial Growth Factor-E (VEGF-E), as disclosed in German Patent Number DE19639601. The above mentioned references are incorporated herein by reference herein.

In an additional embodiment, the Therapeutics of the invention are administered in combination with hematopoietic growth factors. Hematopoietic growth factors that may be administered with the Therapeutics of the invention include, but are not limited to, LEUKINE™ (SARGRAMOSTIM™) and NEUPOGEN™ (FILGRASTIM™).

In an additional embodiment, the Therapeutics of the invention are administered in combination with Fibroblast Growth Factors. Fibroblast Growth Factors that may be administered with the Therapeutics of the invention include, but are not limited to, FGF-1, FGF-2, FGF-3, FGF-4, FGF-5, FGF-6, FGF-7, FGF-8, FGF-9, FGF-10, FGF-11, FGF-12, FGF-13, FGF-14, and FGF-15.

In additional embodiments, the Therapeutics of the invention are administered in combination with other therapeutic or prophylactic regimens, such as, for example, radiation therapy.

Example 14: Method of Treating Decreased Levels of the Polypeptide

The present invention relates to a method for treating an individual in need of an increased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an agonist of the invention (including polypeptides of the invention). Moreover, it will be appreciated that conditions caused by a decrease in the standard or normal expression level of a polypeptide of the present invention in an individual can be treated by administering the agonist or antagonist of the present invention. Thus, the invention also provides a method of treatment of an individual in need of an increased level of the polypeptide comprising administering to such an individual a Therapeutic comprising an amount of the agonist or antagonist to increase the activity level of the polypeptide in such an individual.

For example, a patient with decreased levels of a polypeptide receives a daily dose 0.1-100 ug/kg of the agonist or antagonist for six consecutive days. The exact details of the dosing scheme, based on administration and formulation, are provided in Example 13.

Example 15: Method of Treating Increased Levels of the Polypeptide

The present invention also relates to a method of treating an individual in need of a

decreased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an antagonist of the invention (including polypeptides and antibodies of the invention).

In one example, antisense technology is used to inhibit production of a polypeptide of the present invention. This technology is one example of a method of decreasing levels of a polypeptide, due to a variety of etiologies, such as cancer.

For example, a patient diagnosed with abnormally increased levels of a polypeptide is administered intravenously antisense polynucleotides at 0.5, 1.0, 1.5, 2.0 and 3.0 mg/kg day for 21 days. This treatment is repeated after a 7-day rest period if the treatment was well tolerated. The formulation of the antisense polynucleotide is provided in Example 13.

Example 16: Method of Treatment Using Gene Therapy-Ex Vivo

One method of gene therapy transplants fibroblasts, which are capable of expressing a polypeptide, onto a patient. Generally, fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in tissue-culture medium and separated into small pieces. Small chunks of the tissue are placed on a wet surface of a tissue culture flask, approximately ten pieces are placed in each flask. The flask is turned upside down, closed tight and left at room temperature over night. After 24 hours at room temperature, the flask is inverted and the chunks of tissue remain fixed to the bottom of the flask and fresh media (e.g., Ham's F12 media, with 10% FBS, penicillin and streptomycin) is added. The flasks are then incubated at 37 degree C for approximately one week.

At this time, fresh media is added and subsequently changed every several days. After an additional two weeks in culture, a monolayer of fibroblasts emerge. The monolayer is trypsinized and scaled into larger flasks.

pMV-7 (Kirschmeier, P.T. et al., DNA, 7:219-25 (1988)), flanked by the long terminal repeats of the Moloney murine sarcoma virus, is digested with EcoRI and HindIII and subsequently treated with calf intestinal phosphatase. The linear vector is fractionated on agarose gel and purified, using glass beads.

The cDNA encoding a polypeptide of the present invention can be amplified using PCR primers which correspond to the 5' and 3' end sequences respectively as set forth in Example 1 using primers and having appropriate restriction sites and initiation/stop codons, if

necessary. Preferably, the 5' primer contains an EcoRI site and the 3' primer includes a HindIII site. Equal quantities of the Moloney murine sarcoma virus linear backbone and the amplified EcoRI and HindIII fragment are added together, in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The ligation mixture is then used to transform bacteria HB101, which are then plated onto agar containing kanamycin for the purpose of confirming that the vector has the gene of interest properly inserted.

The amphotropic pA317 or GP+am12 packaging cells are grown in tissue culture to confluent density in Dulbecco's Modified Eagles Medium (DMEM) with 10% calf serum (CS), penicillin and streptomycin. The MSV vector containing the gene is then added to the media and the packaging cells transduced with the vector. The packaging cells now produce infectious viral particles containing the gene (the packaging cells are now referred to as producer cells).

Fresh media is added to the transduced producer cells, and subsequently, the media is harvested from a 10 cm plate of confluent producer cells. The spent media, containing the infectious viral particles, is filtered through a millipore filter to remove detached producer cells and this media is then used to infect fibroblast cells. Media is removed from a sub-confluent plate of fibroblasts and quickly replaced with the media from the producer cells. This media is removed and replaced with fresh media. If the titer of virus is high, then virtually all fibroblasts will be infected and no selection is required. If the titer is very low, then it is necessary to use a retroviral vector that has a selectable marker, such as neo or his. Once the fibroblasts have been efficiently infected, the fibroblasts are analyzed to determine whether protein is produced.

The engineered fibroblasts are then transplanted onto the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads.

Example 17: Gene Therapy Using Endogenous Genes Corresponding To Polynucleotides of the Invention

Another method of gene therapy according to the present invention involves operably associating the endogenous polynucleotide sequence of the invention with a promoter via homologous recombination as described, for example, in U.S. Patent NO: 5,641,670, issued

June 24, 1997; International Publication NO: WO 96/29411, published September 26, 1996; International Publication NO: WO 94/12650, published August 4, 1994; Koller et al., *Proc. Natl. Acad. Sci. USA*, 86:8932-8935 (1989); and Zijlstra et al., *Nature*, 342:435-438 (1989). This method involves the activation of a gene which is present in the target cells, but which is not expressed in the cells, or is expressed at a lower level than desired.

Polynucleotide constructs are made which contain a promoter and targeting sequences, which are homologous to the 5' non-coding sequence of endogenous polynucleotide sequence, flanking the promoter. The targeting sequence will be sufficiently near the 5' end of the polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination. The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter.

The amplified promoter and the amplified targeting sequences are digested with the appropriate restriction enzymes and subsequently treated with calf intestinal phosphatase. The digested promoter and digested targeting sequences are added together in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The construct is size fractionated on an agarose gel then purified by phenol extraction and ethanol precipitation.

In this Example, the polynucleotide constructs are administered as naked polynucleotides via electroporation. However, the polynucleotide constructs may also be administered with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, precipitating agents, etc. Such methods of delivery are known in the art.

Once the cells are transfected, homologous recombination will take place which results in the promoter being operably linked to the endogenous polynucleotide sequence. This results in the expression of polynucleotide corresponding to the polynucleotide in the cell. Expression may be detected by immunological staining, or any other method known in the art.

Fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in DMEM + 10% fetal calf serum. Exponentially growing or early stationary phase

fibroblasts are trypsinized and rinsed from the plastic surface with nutrient medium. An aliquot of the cell suspension is removed for counting, and the remaining cells are subjected to centrifugation. The supernatant is aspirated and the pellet is resuspended in 5 ml of electroporation buffer (20 mM HEPES pH 7.3, 137 mM NaCl. 5 mM KCl, 0.7 mM Na_2 HPO_4, 6 mM dextrose). The cells are recentrifuged, the supernatant aspirated, and the cells resuspended in electroporation buffer containing 1 mg/ml acetylated bovine serum albumin. The final cell suspension contains approximately $3X10^6$ cells/ml. Electroporation should be performed immediately following resuspension.

Plasmid DNA is prepared according to standard techniques. For example, to construct a plasmid for targeting to the locus corresponding to the polynucleotide of the invention, plasmid pUC18 (MBI Fermentas, Amherst, NY) is digested with HindIII. The CMV promoter is amplified by PCR with an XbaI site on the 5' end and a BamHI site on the 3'end. Two non-coding sequences are amplified via PCR: one non-coding sequence (fragment 1) is amplified with a HindIII site at the 5' end and an Xba site at the 3'end; the other non-coding sequence (fragment 2) is amplified with a BamHI site at the 5'end and a HindIII site at the 3'end. The CMV promoter and the fragments (1 and 2) are digested with the appropriate enzymes (CMV promoter - XbaI and BamHI; fragment 1 - XbaI; fragment 2 - BamHI) and ligated together. The resulting ligation product is digested with HindIII, and ligated with the HindIII-digested pUC18 plasmid.

Plasmid DNA is added to a sterile cuvette with a 0.4 cm electrode gap (Bio-Rad). The final DNA concentration is generally at least 120 μg/ml. 0.5 ml of the cell suspension (containing approximately $1.5.X10^6$ cells) is then added to the cuvette, and the cell suspension and DNA solutions are gently mixed. Electroporation is performed with a Gene-Pulser apparatus (Bio-Rad). Capacitance and voltage are set at 960 μF and 250-300 V, respectively. As voltage increases, cell survival decreases, but the percentage of surviving cells that stably incorporate the introduced DNA into their genome increases dramatically. Given these parameters, a pulse time of approximately 14-20 mSec should be observed.

Electroporated cells are maintained at room temperature for approximately 5 min, and the contents of the cuvette are then gently removed with a sterile transfer pipette. The cells are added directly to 10 ml of prewarmed nutrient media (DMEM with 15% calf serum) in a 10 cm dish and incubated at 37 degree C. The following day, the media is aspirated and replaced with 10 ml of fresh media and incubated for a further 16-24 hours.

The engineered fibroblasts are then injected into the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads. The fibroblasts now produce the protein product. The fibroblasts can then be introduced into a patient as described above.

Example 18: Method of Treatment Using Gene Therapy - In Vivo

Another aspect of the present invention is using *in vivo* gene therapy methods to treat disorders, diseases and conditions. The gene therapy method relates to the introduction of naked nucleic acid (DNA, RNA, and antisense DNA or RNA) sequences into an animal to increase or decrease the expression of the polypeptide. The polynucleotide of the present invention may be operatively linked to a promoter or any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques and methods are known in the art, see, for example, WO90/11092, WO98/11779; U.S. Patent NO. 5693622, 5705151, 5580859; Tabata et al., Cardiovasc. Res. 35(3):470-479 (1997); Chao et al., Pharmacol. Res. 35(6):517-522 (1997); Wolff, Neuromuscul. Disord. 7(5):314-318 (1997); Schwartz et al., Gene Ther. 3(5):405-411 (1996); Tsurumi et al., Circulation 94(12):3281-3290 (1996) (incorporated herein by reference).

The polynucleotide constructs may be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, intestine and the like). The polynucleotide constructs can be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

The term "naked" polynucleotide, DNA or RNA, refers to sequences that are free from any delivery vehicle that acts to assist, promote, or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotides of the present invention may also be delivered in liposome formulations (such as those taught in Felgner P.L. et al. (1995) Ann. NY Acad. Sci. 772:126-139 and Abdallah B. et al. (1995) Biol. Cell 85(1):1-7) which can be prepared by methods well known to those skilled in the art.

The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Any strong promoter known to those skilled in the art can be used for driving the expression of DNA. Unlike other gene therapies techniques, one major advantage

of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

The polynucleotide construct can be delivered to the interstitial space of tissues within the an animal, including of muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

For the naked polynucleotide injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 g/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration. The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition. naked polynucleotide constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

The dose response effects of injected polynucleotide in muscle *in vivo* is determined

as follows. Suitable template DNA for production of mRNA coding for polypeptide of the present invention is prepared in accordance with a standard recombinant DNA methodology. The template DNA, which may be either circular or linear, is either used as naked DNA or complexed with liposomes. The quadriceps muscles of mice are then injected with various amounts of the template DNA.

Five to six week old female and male Balb/C mice are anesthetized by intraperitoneal injection with 0.3 ml of 2.5% Avertin. A 1.5 cm incision is made on the anterior thigh, and the quadriceps muscle is directly visualized. The template DNA is injected in 0.1 ml of carrier in a 1 cc syringe through a 27 gauge needle over one minute, approximately 0.5 cm from the distal insertion site of the muscle into the knee and about 0.2 cm deep. A suture is placed over the injection site for future localization, and the skin is closed with stainless steel clips.

After an appropriate incubation time (e.g., 7 days) muscle extracts are prepared by excising the entire quadriceps. Every fifth 15 um cross-section of the individual quadriceps muscles is histochemically stained for protein expression. A time course for protein expression may be done in a similar fashion except that quadriceps from different mice are harvested at different times. Persistence of DNA in muscle following injection may be determined by Southern blot analysis after preparing total cellular DNA and HIRT supernatants from injected and control mice. The results of the above experimentation in mice can be use to extrapolate proper dosages and other treatment parameters in humans and other animals using naked DNA.

Example 19: Transgenic Animals

The polypeptides of the invention can also be expressed in transgenic animals. Animals of any species, including, but not limited to, mice, rats, rabbits, hamsters, guinea pigs, pigs, micro-pigs, goats, sheep, cows and non-human primates, *e.g.*, baboons, monkeys, and chimpanzees may be used to generate transgenic animals. In a specific embodiment, techniques described herein or otherwise known in the art, are used to express polypeptides of the invention in humans. as part of a gene therapy protocol.

Any technique known in the art may be used to introduce the transgene (i.e., polynucleotides of the invention) into animals to produce the founder lines of transgenic

animals. Such techniques include, but are not limited to, pronuclear microinjection (Paterson et al., Appl. Microbiol. Biotechnol. 40:691-698 (1994); Carver et al., Biotechnology (NY) 11:1263-1270 (1993); Wright et al., Biotechnology (NY) 9:830-834 (1991); and Hoppe et al., U.S. Pat. No. 4,873,191 (1989)); retrovirus mediated gene transfer into germ lines (Van der Putten et al., Proc. Natl. Acad. Sci., USA 82:6148-6152 (1985)), blastocysts or embryos; gene targeting in embryonic stem cells (Thompson et al., Cell 56:313-321 (1989)); electroporation of cells or embryos (Lo, 1983, Mol Cell. Biol. 3:1803-1814 (1983)); introduction of the polynucleotides of the invention using a gene gun (see, e.g., Ulmer et al., Science 259:1745 (1993); introducing nucleic acid constructs into embryonic pleuripotent stem cells and transferring the stem cells back into the blastocyst; and sperm-mediated gene transfer (Lavitrano et al., Cell 57:717-723 (1989); etc. For a review of such techniques, see Gordon, "Transgenic Animals," Intl. Rev. Cytol. 115:171-229 (1989), which is incorporated by reference herein in its entirety.

Any technique known in the art may be used to produce transgenic clones containing polynucleotides of the invention, for example, nuclear transfer into enucleated oocytes of nuclei from cultured embryonic, fetal, or adult cells induced to quiescence (Campell et al., Nature 380:64-66 (1996); Wilmut et al., Nature 385:810-813 (1997)).

The present invention provides for transgenic animals that carry the transgene in all their cells, as well as animals which carry the transgene in some, but not all their cells, *i.e.*, mosaic animals or chimeric. The transgene may be integrated as a single transgene or as multiple copies such as in concatamers, *e.g.*, head-to-head tandems or head-to-tail tandems. The transgene may also be selectively introduced into and activated in a particular cell type by following, for example, the teaching of Lasko et al. (Lasko et al., Proc. Natl. Acad. Sci. USA 89:6232-6236 (1992)). The regulatory sequences required for such a cell-type specific activation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art. When it is desired that the polynucleotide transgene be integrated into the chromosomal site of the endogenous gene, gene targeting is preferred. Briefly, when such a technique is to be utilized, vectors containing some nucleotide sequences homologous to the endogenous gene are designed for the purpose of integrating, via homologous recombination with chromosomal sequences, into and disrupting the function of the nucleotide sequence of the endogenous gene. The transgene may also be selectively introduced into a particular cell type, thus inactivating the endogenous gene in only that cell type, by following, for example,

the teaching of Gu et al. (Gu et al.. Science 265:103-106 (1994)). The regulatory sequences required for such a cell-type specific inactivation will depend upon the particular cell type of interest. and will be apparent to those of skill in the art.

Once transgenic animals have been generated. the expression of the recombinant gene may be assayed utilizing standard techniques. Initial screening may be accomplished by Southern blot analysis or PCR techniques to analyze animal tissues to verify that integration of the transgene has taken place. The level of mRNA expression of the transgene in the tissues of the transgenic animals may also be assessed using techniques which include, but are not limited to, Northern blot analysis of tissue samples obtained from the animal, *in situ* hybridization analysis, and reverse transcriptase-PCR (rt-PCR). Samples of transgenic gene-expressing tissue may also be evaluated immunocytochemically or immunohistochemically using antibodies specific for the transgene product.

Once the founder animals are produced, they may be bred, inbred, outbred, or crossbred to produce colonies of the particular animal. Examples of such breeding strategies include, but are not limited to: outbreeding of founder animals with more than one integration site in order to establish separate lines; inbreeding of separate lines in order to produce compound transgenics that express the transgene at higher levels because of the effects of additive expression of each transgene; crossing of heterozygous transgenic animals to produce animals homozygous for a given integration site in order to both augment expression and eliminate the need for screening of animals by DNA analysis; crossing of separate homozygous lines to produce compound heterozygous or homozygous lines; and breeding to place the transgene on a distinct background that is appropriate for an experimental model of interest.

Transgenic animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 20: Knock-Out Animals

Endogenous gene expression can also be reduced by inactivating or "knocking out" the gene and/or its promoter using targeted homologous recombination. (*E.g.*, see Smithies

et al.. Nature 317:230-234 (1985); Thomas & Capecchi, Cell 51:503-512 (1987): Thompson et al., Cell 5:313-321 (1989); each of which is incorporated by reference herein in its entirety). For example, a mutant, non-functional polynucleotide of the invention (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous polynucleotide sequence (either the coding regions or regulatory regions of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect cells that express polypeptides of the invention *in vivo*. In another embodiment, techniques known in the art are used to generate knockouts in cells that contain, but do not express the gene of interest. Insertion of the DNA construct, via targeted homologous recombination, results in inactivation of the targeted gene. Such approaches are particularly suited in research and agricultural fields where modifications to embryonic stem cells can be used to generate animal offspring with an inactive targeted gene (*e.g.*, see Thomas & Capecchi 1987 and Thompson 1989, *supra*). However this approach can be routinely adapted for use in humans provided the recombinant DNA constructs are directly administered or targeted to the required site *in vivo* using appropriate viral vectors that will be apparent to those of skill in the art.

In further embodiments of the invention, cells that are genetically engineered to express the polypeptides of the invention, or alternatively, that are genetically engineered not to express the polypeptides of the invention (e.g., knockouts) are administered to a patient *in vivo*. Such cells may be obtained from the patient (i.e., animal, including human) or an MHC compatible donor and can include, but are not limited to fibroblasts, bone marrow cells, blood cells (e.g., lymphocytes), adipocytes, muscle cells, endothelial cells etc. The cells are genetically engineered *in vitro* using recombinant DNA techniques to introduce the coding sequence of polypeptides of the invention into the cells, or alternatively, to disrupt the coding sequence and/or endogenous regulatory sequence associated with the polypeptides of the invention, e.g., by transduction (using viral vectors, and preferably vectors that integrate the transgene into the cell genome) or transfection procedures, including, but not limited to, the use of plasmids, cosmids, YACs, naked DNA, electroporation, liposomes, etc. The coding sequence of the polypeptides of the invention can be placed under the control of a strong constitutive or inducible promoter or promoter/enhancer to achieve expression, and preferably secretion, of the polypeptides of the invention. The engineered cells which express and preferably secrete the polypeptides of the invention can be introduced into the

patient systemically, e.g., in the circulation, or intraperitoneally.

Alternatively, the cells can be incorporated into a matrix and implanted in the body, e.g., genetically engineered fibroblasts can be implanted as part of a skin graft; genetically engineered endothelial cells can be implanted as part of a lymphatic or vascular graft. (See, for example, Anderson et al. U.S. Patent No. 5,399,349; and Mulligan & Wilson, U.S. Patent No. 5,460,959 each of which is incorporated by reference herein in its entirety).

When the cells to be administered are non-autologous or non-MHC compatible cells, they can be administered using well known techniques which prevent the development of a host immune response against the introduced cells. For example, the cells may be introduced in an encapsulated form which, while allowing for an exchange of components with the immediate extracellular environment, does not allow the introduced cells to be recognized by the host immune system.

Transgenic and "knock-out" animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 22: Assays Detecting Stimulation or Inhibition of B cell Proliferation and Differentiation

Generation of functional humoral immune responses requires both soluble and cognate signaling between B-lineage cells and their microenvironment. Signals may impart a positive stimulus that allows a B-lineage cell to continue its programmed development, or a negative stimulus that instructs the cell to arrest its current developmental pathway. To date, numerous stimulatory and inhibitory signals have been found to influence B cell responsiveness including IL-2, IL-4, IL-5, IL-6, IL-7, IL10, IL-13, IL-14 and IL-15. Interestingly, these signals are by themselves weak effectors but can, in combination with various co-stimulatory proteins, induce activation, proliferation, differentiation, homing, tolerance and death among B cell populations.

One of the best studied classes of B-cell co-stimulatory proteins is the TNF-superfamily. Within this family CD40, CD27, and CD30 along with their respective ligands

CD154, CD70, and CD153 have been found to regulate a variety of immune responses. Assays which allow for the detection and/or observation of the proliferation and differentiation of these B-cell populations and their precursors are valuable tools in determining the effects various proteins may have on these B-cell populations in terms of proliferation and differentiation. Listed below are two assays designed to allow for the detection of the differentiation, proliferation, or inhibition of B-cell populations and their precursors.

In Vitro Assay- Agonists or antagonists of the invention can be assessed for its ability to induce activation, proliferation, differentiation or inhibition and/or death in B-cell populations and their precursors. The activity of the agonists or antagonists of the invention on purified human tonsillar B cells, measured qualitatively over the dose range from 0.1 to 10,000 ng/mL, is assessed in a standard B-lymphocyte co-stimulation assay in which purified tonsillar B cells are cultured in the presence of either formalin-fixed Staphylococcus aureus Cowan I (SAC) or immobilized anti-human IgM antibody as the priming agent. Second signals such as IL-2 and IL-15 synergize with SAC and IgM crosslinking to elicit B cell proliferation as measured by tritiated-thymidine incorporation. Novel synergizing agents can be readily identified using this assay. The assay involves isolating human tonsillar B cells by magnetic bead (MACS) depletion of CD3-positive cells. The resulting cell population is greater than 95% B cells as assessed by expression of CD45R(B220).

Various dilutions of each sample are placed into individual wells of a 96-well plate to which are added 10^5 B-cells suspended in culture medium (RPMI 1640 containing 10% FBS, 5 X 10^{-5}M 2ME, 100U/ml penicillin, 10ug/ml streptomycin, and 10^{-5} dilution of SAC) in a total volume of 150ul. Proliferation or inhibition is quantitated by a 20h pulse (1uCi/well) with 3H-thymidine (6.7 Ci/mM) beginning 72h post factor addition. The positive and negative controls are IL2 and medium respectively.

In Vivo Assay- BALB/c mice are injected (i.p.) twice per day with buffer only, or 2 mg/Kg of agonists or antagonists of the invention, or truncated forms thereof. Mice receive this treatment for 4 consecutive days, at which time they are sacrificed and various tissues and serum collected for analyses. Comparison of H&E sections from normal spleens and spleens treated with agonists or antagonists of the invention identify the results of the activity of the agonists or antagonists on spleen cells, such as the diffusion of peri-arterial lymphatic sheaths, and/or significant increases in the nucleated cellularity of the red pulp regions, which

may indicate the activation of the differentiation and proliferation of B-cell populations. Immunohistochemical studies using a B cell marker, anti-CD45R(B220), are used to determine whether any physiological changes to splenic cells, such as splenic disorganization, are due to increased B-cell representation within loosely defined B-cell zones that infiltrate established T-cell regions.

Flow cytometric analyses of the spleens from mice treated with agonist or antagonist is used to indicate whether the agonists or antagonists specifically increases the proportion of ThB+, CD45R(B220)dull B cells over that which is observed in control mice. Likewise, a predicted consequence of increased mature B-cell representation in vivo is a relative increase in serum Ig titers. Accordingly, serum IgM and IgA levels are compared between buffer and agonists or antagonists-treated mice.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 23: T Cell Proliferation Assay

A CD3-induced proliferation assay is performed on PBMCs and is measured by the uptake of ^{3}H-thymidine. The assay is performed as follows. Ninety-six well plates are coated with 100 μl/well of mAb to CD3 (HIT3a, Pharmingen) or isotype-matched control mAb (B33.1) overnight at 4 degrees C (1 μg/ml in .05M bicarbonate buffer, pH 9.5), then washed three times with PBS. PBMC are isolated by F/H gradient centrifugation from human peripheral blood and added to quadruplicate wells (5×10^4/well) of mAb coated plates in RPMI containing 10% FCS and P/S in the presence of varying concentrations of agonists or antagonists of the invention (total volume 200 ul). Relevant protein buffer and medium alone are controls. After 48 hr. culture at 37 degrees C, plates are spun for 2 min. at 1000 rpm and 100 μl of supernatant is removed and stored –20 degrees C for measurement of IL-2 (or other cytokines) if effect on proliferation is observed. Wells are supplemented with 100 ul of medium containing 0.5 uCi of ^{3}H-thymidine and cultured at 37 degrees C for 18-24 hr. Wells are harvested and incorporation of ^{3}H-thymidine used as a measure of proliferation. Anti-CD3 alone is the positive control for proliferation. IL-2 (100 U/ml) is also used as a control which enhances proliferation. Control antibody which does not induce proliferation

of T cells is used as the negative controls for the effects of agonists or antagonists of the invention.

The studies described in this example tested activity of agonists or antagonists of the invention. However. one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 24: Effect of Agonists or Antagonists of the Invention on the Expression of MHC Class II. Costimulatory and Adhesion Molecules and Cell Differentiation of Monocytes and Monocyte-Derived Human Dendritic Cells

Dendritic cells are generated by the expansion of proliferating precursors found in the peripheral blood: adherent PBMC or elutriated monocytic fractions are cultured for 7-10 days with GM-CSF (50 ng/ml) and IL-4 (20 ng/ml). These dendritic cells have the characteristic phenotype of immature cells (expression of CD1, CD80, CD86, CD40 and MHC class II antigens). Treatment with activating factors, such as TNF-α, causes a rapid change in surface phenotype (increased expression of MHC class I and II, costimulatory and adhesion molecules, downregulation of FCγRII, upregulation of CD83). These changes correlate with increased antigen-presenting capacity and with functional maturation of the dendritic cells.

FACS analysis of surface antigens is performed as follows. Cells are treated 1-3 days with increasing concentrations of agonist or antagonist of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degrees C. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

<u>Effect on the production of cytokines</u>. Cytokines generated by dendritic cells, in particular IL-12, are important in the initiation of T-cell dependent immune responses. IL-12 strongly influences the development of Thl helper T-cell immune response, and induces cytotoxic T and NK cell function. An ELISA is used to measure the IL-12 release as follows. Dendritic cells (10^6/ml) are treated with increasing concentrations of agonists or antagonists of the invention for 24 hours. LPS (100 ng/ml) is added to the cell culture as positive control. Supernatants from the cell cultures are then collected and analyzed for IL-12 content using

commercial ELISA kit (e..g, R & D Systems (Minneapolis, MN)). The standard protocols provided with the kits are used.

Effect on the expression of MHC Class II, costimulatory and adhesion molecules. Three major families of cell surface antigens can be identified on monocytes: adhesion molecules, molecules involved in antigen presentation, and Fc receptor. Modulation of the expression of MHC class II antigens and other costimulatory molecules, such as B7 and ICAM-1, may result in changes in the antigen presenting capacity of monocytes and ability to induce T cell activation. Increase expression of Fc receptors may correlate with improved monocyte cytotoxic activity, cytokine release and phagocytosis.

FACS analysis is used to examine the surface antigens as follows. Monocytes are treated 1-5 days with increasing concentrations of agonists or antagonists of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degreesC. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

Monocyte activation and/or increased survival. Assays for molecules that activate (or alternatively, inactivate) monocytes and/or increase monocyte survival (or alternatively, decrease monocyte survival) are known in the art and may routinely be applied to determine whether a molecule of the invention functions as an inhibitor or activator of monocytes. Agonists or antagonists of the invention can be screened using the three assays described below. For each of these assays, Peripheral blood mononuclear cells (PBMC) are purified from single donor leukopacks (American Red Cross, Baltimore, MD) by centrifugation through a Histopaque gradient (Sigma). Monocytes are isolated from PBMC by counterflow centrifugal elutriation.

Monocyte Survival Assay. Human peripheral blood monocytes progressively lose viability when cultured in absence of serum or other stimuli. Their death results from internally regulated process (apoptosis). Addition to the culture of activating factors, such as TNF-alpha dramatically improves cell survival and prevents DNA fragmentation. Propidium iodide (PI) staining is used to measure apoptosis as follows. Monocytes are cultured for 48 hours in

polypropylene tubes in serum-free medium (positive control), in the presence of 100 ng/ml TNF-alpha (negative control), and in the presence of varying concentrations of the compound to be tested. Cells are suspended at a concentration of 2 x 10^6/ml in PBS containing PI at a final concentration of 5 μg/ml, and then incubaed at room temperature for 5 minutes before FACScan analysis. PI uptake has been demonstrated to correlate with DNA fragmentation in this experimental paradigm.

Effect on cytokine release. An important function of monocytes/macrophages is their regulatory activity on other cellular populations of the immune system through the release of cytokines after stimulation. An ELISA to measure cytokine release is performed as follows. Human monocytes are incubated at a density of $5x10^5$ cells/ml with increasing concentrations of agonists or antagonists of the invention and under the same conditions, but in the absence of agonists or antagonists. For IL-12 production, the cells are primed overnight with IFN (100 U/ml) in presence of agonist or antagonist of the invention. LPS (10 ng/ml) is then added. Conditioned media are collected after 24h and kept frozen until use. Measurement of TNF-alpha, IL-10, MCP-1 and IL-8 is then performed using a commercially available ELISA kit (e. g, R & D Systems (Minneapolis, MN)) and applying the standard protocols provided with the kit.

Oxidative burst. Purified monocytes are plated in 96-w plate at $2\text{-}1x10^5$ cell/well. Increasing concentrations of agonists or antagonists of the invention are added to the wells in a total volume of 0.2 ml culture medium (RPMI 1640 + 10% FCS, glutamine and antibiotics). After 3 days incubation, the plates are centrifuged and the medium is removed from the wells. To the macrophage monolayers, 0.2 ml per well of phenol red solution (140 mM NaCl, 10 mM potassium phosphate buffer pH 7.0, 5.5 mM dextrose, 0.56 mM phenol red and 19 U/ml of HRPO) is added, together with the stimulant (200 nM PMA). The plates are incubated at 37°C for 2 hours and the reaction is stopped by adding 20 μl 1N NaOH per well. The absorbance is read at 610 nm. To calculate the amount of H_2O_2 produced by the macrophages. a standard curve of a H_2O_2 solution of known molarity is performed for each experiment.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test

the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 25: Biological Effects of Agonists or Antagonists of the Invention

Astrocyte and Neuronal Assays.

Agonists or antagonists of the invention, expressed in *Escherichia coli* and purified as described above, can be tested for activity in promoting the survival, neurite outgrowth, or phenotypic differentiation of cortical neuronal cells and for inducing the proliferation of glial fibrillary acidic protein immunopositive cells, astrocytes. The selection of cortical cells for the bioassay is based on the prevalent expression of FGF-1 and FGF-2 in cortical structures and on the previously reported enhancement of cortical neuronal survival resulting from FGF-2 treatment. A thymidine incorporation assay, for example, can be used to elucidate an agonist or antagonist of the invention's activity on these cells.

Moreover, previous reports describing the biological effects of FGF-2 (basic FGF) on cortical or hippocampal neurons *in vitro* have demonstrated increases in both neuron survival and neurite outgrowth (Walicke et al., "Fibroblast growth factor promotes survival of dissociated hippocampal neurons and enhances neurite extension." *Proc. Natl. Acad. Sci. USA 83*:3012-3016. (1986), assay herein incorporated by reference in its entirety). However, reports from experiments done on PC-12 cells suggest that these two responses are not necessarily synonymous and may depend on not only which FGF is being tested but also on which receptor(s) are expressed on the target cells. Using the primary cortical neuronal culture paradigm, the ability of an agonist or antagonist of the invention to induce neurite outgrowth can be compared to the response achieved with FGF-2 using, for example, a thymidine incorporation assay.

Fibroblast and endothelial cell assays.

Human lung fibroblasts are obtained from Clonetics (San Diego, CA) and maintained in growth media from Clonetics. Dermal microvascular endothelial cells are obtained from Cell Applications (San Diego, CA). For proliferation assays, the human lung fibroblasts and

dermal microvascular endothelial cells can be cultured at 5,000 cells/well in a 96-well plate for one day in growth medium. The cells are then incubated for one day in 0.1% BSA basal medium. After replacing the medium with fresh 0.1% BSA medium, the cells are incubated with the test proteins for 3 days. Alamar Blue (Alamar Biosciences, Sacramento, CA) is added to each well to a final concentration of 10%. The cells are incubated for 4 hr. Cell viability is measured by reading in a CytoFluor fluorescence reader. For the PGE_2 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or agonists or antagonists of the invention with or without IL-1α for 24 hours. The supernatants are collected and assayed for PGE_2 by EIA kit (Cayman, Ann Arbor, MI). For the IL-6 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or with or without agonists or antagonists of the invention IL-1α for 24 hours. The supernatants are collected and assayed for IL-6 by ELISA kit (Endogen, Cambridge, MA).

Human lung fibroblasts are cultured with FGF-2 or agonists or antagonists of the invention for 3 days in basal medium before the addition of Alamar Blue to assess effects on growth of the fibroblasts. FGF-2 should show a stimulation at 10 - 2500 ng/ml which can be used to compare stimulation with agonists or antagonists of the invention.

Parkinson Models.

The loss of motor function in Parkinson's disease is attributed to a deficiency of striatal dopamine resulting from the degeneration of the nigrostriatal dopaminergic projection neurons. An animal model for Parkinson's that has been extensively characterized involves the systemic administration of 1-methyl-4 phenyl 1,2,3,6-tetrahydropyridine (MPTP). In the CNS, MPTP is taken-up by astrocytes and catabolized by monoamine oxidase B to 1-methyl-4-phenyl pyridine (MPP^+) and released. Subsequently, MPP^+ is actively accumulated in dopaminergic neurons by the high-affinity reuptake transporter for dopamine. MPP^+ is then concentrated in mitochondria by the electrochemical gradient and selectively inhibits nicotidamide adenine disphosphate: ubiquinone oxidoreductionase (complex I), thereby interfering with electron transport and eventually generating oxygen radicals.

It has been demonstrated in tissue culture paradigms that FGF-2 (basic FGF) has

trophic activity towards nigral dopaminergic neurons (Ferrari et al., Dev. Biol. 1989). Recently, Dr. Unsicker's group has demonstrated that administering FGF-2 in gel foam implants in the striatum results in the near complete protection of nigral dopaminergic neurons from the toxicity associated with MPTP exposure (Otto and Unsicker, J. Neuroscience, 1990).

Based on the data with FGF-2, agonists or antagonists of the invention can be evaluated to determine whether it has an action similar to that of FGF-2 in enhancing dopaminergic neuronal survival *in vitro* and it can also be tested *in vivo* for protection of dopaminergic neurons in the striatum from the damage associated with MPTP treatment. The potential effect of an agonist or antagonist of the invention is first examined in vitro in a dopaminergic neuronal cell culture paradigm. The cultures are prepared by dissecting the midbrain floor plate from gestation day 14 Wistar rat embryos. The tissue is dissociated with trypsin and seeded at a density of 200,000 cells/cm^2 on polyorthinine-laminin coated glass coverslips. The cells are maintained in Dulbecco's Modified Eagle's medium and F12 medium containing hormonal supplements (N1). The cultures are fixed with paraformaldehyde after 8 days in vitro and are processed for tyrosine hydroxylase, a specific marker for dopminergic neurons, immunohistochemical staining. Dissociated cell cultures are prepared from embryonic rats. The culture medium is changed every third day and the factors are also added at that time.

Since the dopaminergic neurons are isolated from animals at gestation day 14, a developmental time which is past the stage when the dopaminergic precursor cells are proliferating, an increase in the number of tyrosine hydroxylase immunopositive neurons would represent an increase in the number of dopaminergic neurons surviving *in vitro*. Therefore, if an agonist or antagonist of the invention acts to prolong the survival of dopaminergic neurons, it would suggest that the agonist or antagonist may be involved in Parkinson's Disease.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 26: The Effect of Agonists or Antagonists of the Invention on the Growth of

Vascular Endothelial Cells

On day 1, human umbilical vein endothelial cells (HUVEC) are seeded at 2-5x10^4 cells/35 mm dish density in M199 medium containing 4% fetal bovine serum (FBS), 16 units/ml heparin, and 50 units/ml endothelial cell growth supplements (ECGS, Biotechnique, Inc.). On day 2, the medium is replaced with M199 containing 10% FBS, 8 units/ml heparin. An agonist or antagonist of the invention, and positive controls, such as VEGF and basic FGF (bFGF) are added, at varying concentrations. On days 4 and 6, the medium is replaced. On day 8, cell number is determined with a Coulter Counter.

An increase in the number of HUVEC cells indicates that the compound of the invention may proliferate vascular endothelial cells, while a decrease in the number of HUVEC cell indicates that the compound of the invention inhibits vascular endothelial cells.

The studies described in this example tested activity of a polypeptide of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), agonists, and/or antagonists of the invention.

Example 27: Rat Corneal Wound Healing Model

This animal model shows the effect of an agonist or antagonist of the invention on neovascularization. The experimental protocol includes:

a) Making a 1-1.5 mm long incision from the center of cornea into the stromal layer.

b) Inserting a spatula below the lip of the incision facing the outer corner of the eye.

c) Making a pocket (its base is 1-1.5 mm form the edge of the eye).

d) Positioning a pellet, containing 50ng- 5ug of an agonist or antagonist of the invention, within the pocket.

e) Treatment with an agonist or antagonist of the invention can also be applied topically to the corneal wounds in a dosage range of 20mg - 500mg (daily treatment for five days).

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test

the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 28: Diabetic Mouse and Glucocorticoid-Impaired Wound Healing Models

A. Diabetic db+/db+ Mouse Model.

To demonstrate that an agonist or antagonist of the invention accelerates the healing process, the genetically diabetic mouse model of wound healing is used. The full thickness wound healing model in the db+/db+ mouse is a well characterized, clinically relevant and reproducible model of impaired wound healing. Healing of the diabetic wound is dependent on formation of granulation tissue and re-epithelialization rather than contraction (Gartner, M.H. *et al., J. Surg. Res. 52*:389 (1992); Greenhalgh, D.G. *et al., Am. J. Pathol. 136*:1235 (1990)).

The diabetic animals have many of the characteristic features observed in Type II diabetes mellitus. Homozygous (db+/db+) mice are obese in comparison to their normal heterozygous (db+/+m) littermates. Mutant diabetic (db+/db+) mice have a single autosomal recessive mutation on chromosome 4 (db+) (Coleman *et al. Proc. Natl. Acad. Sci. USA 77*:283-293 (1982)). Animals show polyphagia, polydipsia and polyuria. Mutant diabetic mice (db+/db+) have elevated blood glucose, increased or normal insulin levels, and suppressed cell-mediated immunity (Mandel *et al., J. Immunol. 120*:1375 (1978); Debray-Sachs, M. *et al., Clin. Exp. Immunol. 51(1)*:1-7 (1983); Leiter *et al., Am. J. of Pathol. 114*:46-55 (1985)). Peripheral neuropathy, myocardial complications, and microvascular lesions, basement membrane thickening and glomerular filtration abnormalities have been described in these animals (Norido, F. *et al., Exp. Neurol. 83(2)*:221-232 (1984); Robertson *et al., Diabetes 29(1)*:60-67 (1980); Giacomelli *et al., Lab Invest. 40(4)*:460-473 (1979); Coleman, D.L., *Diabetes 31 (Suppl)*:1-6 (1982)). These homozygous diabetic mice develop hyperglycemia that is resistant to insulin analogous to human type II diabetes (Mandel *et al., J. Immunol. 120*:1375-1377 (1978)).

The characteristics observed in these animals suggests that healing in this model may be similar to the healing observed in human diabetes (Greenhalgh, *et al., Am. J. of Pathol. 136*:1235-1246 (1990)).

Genetically diabetic female C57BL/KsJ (db+/db+) mice and their non-diabetic (db+/+m) heterozygous littermates are used in this study (Jackson Laboratories). The

animals are purchased at 6 weeks of age and are 8 weeks old at the beginning of the study. Animals are individually housed and received food and water ad libitum. All manipulations are performed using aseptic techniques. The experiments are conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

Wounding protocol is performed according to previously reported methods (Tsuboi, R. and Rifkin, D.B., *J. Exp. Med. 172*:245-251 (1990)). Briefly, on the day of wounding, animals are anesthetized with an intraperitoneal injection of Avertin (0.01 mg/mL), 2,2,2-tribromoethanol and 2-methyl-2-butanol dissolved in deionized water. The dorsal region of the animal is shaved and the skin washed with 70% ethanol solution and iodine. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is then created using a Keyes tissue punch. Immediately following wounding, the surrounding skin is gently stretched to eliminate wound expansion. The wounds are left open for the duration of the experiment. Application of the treatment is given topically for 5 consecutive days commencing on the day of wounding. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

Wounds are visually examined and photographed at a fixed distance at the day of surgery and at two day intervals thereafter. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

An agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology and immunohistochemistry. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

Three groups of 10 animals each (5 diabetic and 5 non-diabetic controls) are evaluated: 1) Vehicle placebo control, 2) untreated group, and 3) treated group.

Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total square area of the wound. Contraction is then estimated by establishing

the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is 64mm^2, the corresponding size of the dermal punch. Calculations are made using the following formula:

[Open area on day 8] - [Open area on day 1] / [Open area on day 1]

Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using a Reichert-Jung microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds are used to assess whether the healing process and the morphologic appearance of the repaired skin is altered by treatment with an agonist or antagonist of the invention. This assessment included verification of the presence of cell accumulation, inflammatory cells, capillaries, fibroblasts, re-epithelialization and epidermal maturity (Greenhalgh, D.G. *et al., Am. J. Pathol. 136:*1235 (1990)). A calibrated lens micrometer is used by a blinded observer.

Tissue sections are also stained immunohistochemically with a polyclonal rabbit anti-human keratin antibody using ABC Elite detection system. Human skin is used as a positive tissue control while non-immune IgG is used as a negative control. Keratinocyte growth is determined by evaluating the extent of reepithelialization of the wound using a calibrated lens micrometer.

Proliferating cell nuclear antigen/cyclin (PCNA) in skin specimens is demonstrated by using anti-PCNA antibody (1:50) with an ABC Elite detection system. Human colon cancer served as a positive tissue control and human brain tissue is used as a negative tissue control. Each specimen included a section with omission of the primary antibody and substitution with non-immune mouse IgG. Ranking of these sections is based on the extent of proliferation on a scale of 0-8, the lower side of the scale reflecting slight proliferation to the higher side reflecting intense proliferation.

Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

B. Steroid Impaired Rat Model

The inhibition of wound healing by steroids has been well documented in various *in vitro* and

in vivo systems (Wahl. Glucocorticoids and Wound healing. In: Anti-Inflammatory Steroid Action: Basic and Clinical Aspects. 280-302 (1989); Wahl*et al.*. *J. Immunol. 115*: 476-481 (1975); Werb *et al.*, *J. Exp. Med. 147*:1684-1694 (1978)). Glucocorticoids retard wound healing by inhibiting angiogenesis. decreasing vascular permeability (Ebert *et al.*, *An. Intern. Med. 37*:701-705 (1952)), fibroblast proliferation. and collagen synthesis (Beck *et al.*, *Growth Factors. 5:* 295-304 (1991); Haynes *et al.*, *J. Clin. Invest. 61:* 703-797 (1978)) and producing a transient reduction of circulating monocytes (Haynes et al., *J. Clin. Invest. 61:* 703-797 (1978); Wahl, "Glucocorticoids and wound healing", *In:* Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989)). The systemic administration of steroids to impaired wound healing is a well establish phenomenon in rats (Beck *et al.*, *Growth Factors. 5:* 295-304 (1991); Haynes *et al.*, *J. Clin. Invest. 61:* 703-797 (1978); Wahl, "Glucocorticoids and wound healing", *In*: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989); Pierce *et al.*, *Proc. Natl. Acad. Sci. USA 86*: 2229-2233 (1989)).

To demonstrate that an agonist or antagonist of the invention can accelerate the healing process, the effects of multiple topical applications of the agonist or antagonist on full thickness excisional skin wounds in rats in which healing has been impaired by the systemic administration of methylprednisolone is assessed.

Young adult male Sprague Dawley rats weighing 250-300 g (Charles River Laboratories) are used in this example. The animals are purchased at 8 weeks of age and are 9 weeks old at the beginning of the study. The healing response of rats is impaired by the systemic administration of methylprednisolone (17mg/kg/rat intramuscularly) at the time of wounding. Animals are individually housed and received food and water *ad libitum*. All manipulations are performed using aseptic techniques. This study is conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

The wounding protocol is followed according to section A, above. On the day of wounding, animals are anesthetized with an intramuscular injection of ketamine (50 mg/kg) and xylazine (5 mg/kg). The dorsal region of the animal is shaved and the skin washed with 70% ethanol and iodine solutions. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is created using a Keyes tissue punch. The wounds are left open for the duration of the experiment. Applications of the testing materials

are given topically once a day for 7 consecutive days commencing on the day of wounding and subsequent to methylprednisolone administration. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

Wounds are visually examined and photographed at a fixed distance at the day of wounding and at the end of treatment. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

The agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

Four groups of 10 animals each (5 with methylprednisolone and 5 without glucocorticoid) are evaluated: 1) Untreated group 2) Vehicle placebo control 3) treated groups.

Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total area of the wound. Closure is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is $64mm^2$, the corresponding size of the dermal punch. Calculations are made using the following formula:

[Open area on day 8] - [Open area on day 1] / [Open area on day 1]

Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using an Olympus microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds allows assessment of whether the healing process and the morphologic appearance of the repaired skin is improved by treatment with an agonist or antagonist of the invention. A calibrated lens micrometer is used by a blinded observer to

determine the distance of the wound gap.

Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 29: Lymphadema Animal Model

The purpose of this experimental approach is to create an appropriate and consistent lymphedema model for testing the therapeutic effects of an agonist or antagonist of the invention in lymphangiogenesis and re-establishment of the lymphatic circulatory system in the rat hind limb. Effectiveness is measured by swelling volume of the affected limb, quantification of the amount of lymphatic vasculature, total blood plasma protein, and histopathology. Acute lymphedema is observed for 7-10 days. Perhaps more importantly, the chronic progress of the edema is followed for up to 3-4 weeks.

Prior to beginning surgery, blood sample is drawn for protein concentration analysis. Male rats weighing approximately ~350g are dosed with Pentobarbital. Subsequently, the right legs are shaved from knee to hip. The shaved area is swabbed with gauze soaked in 70% EtOH. Blood is drawn for serum total protein testing. Circumference and volumetric measurements are made prior to injecting dye into paws after marking 2 measurement levels (0.5 cm above heel, at mid-pt of dorsal paw). The intradermal dorsum of both right and left paws are injected with 0.05 ml of 1% Evan's Blue. Circumference and volumetric measurements are then made following injection of dye into paws.

Using the knee joint as a landmark, a mid-leg inguinal incision is made circumferentially allowing the femoral vessels to be located. Forceps and hemostats are used to dissect and separate the skin flaps. After locating the femoral vessels, the lymphatic vessel that runs along side and underneath the vessel(s) is located. The main lymphatic vessels in this area are then electrically coagulated or suture ligated.

Using a microscope, muscles in back of the leg (near the semitendinosis and adductors) are bluntly dissected. The popliteal lymph node is then located. The 2 proximal and 2 distal lymphatic vessels and distal blood supply of the popliteal node are then and

ligated by suturing. The popliteal lymph node, and any accompanying adipose tissue, is then removed by cutting connective tissues.

Care is taken to control any mild bleeding resulting from this procedure. After lymphatics are occluded, the skin flaps are sealed by using liquid skin (Vetbond) (AJ Buck). The separated skin edges are sealed to the underlying muscle tissue while leaving a gap of ~0.5 cm around the leg. Skin also may be anchored by suturing to underlying muscle when necessary.

To avoid infection, animals are housed individually with mesh (no bedding). Recovering animals are checked daily through the optimal edematous peak, which typically occurred by day 5-7. The plateau edematous peak are then observed. To evaluate the intensity of the lymphedema, the circumference and volumes of 2 designated places on each paw before operation and daily for 7 days are measured. The effect plasma proteins on lymphedema is determined and whether protein analysis is a useful testing perimeter is also investigated. The weights of both control and edematous limbs are evaluated at 2 places. Analysis is performed in a blind manner.

Circumference Measurements: Under brief gas anesthetic to prevent limb movement, a cloth tape is used to measure limb circumference. Measurements are done at the ankle bone and dorsal paw by 2 different people then those 2 readings are averaged. Readings are taken from both control and edematous limbs.

Volumetric Measurements: On the day of surgery, animals are anesthetized with Pentobarbital and are tested prior to surgery. For daily volumetrics animals are under brief halothane anesthetic (rapid immobilization and quick recovery), both legs are shaved and equally marked using waterproof marker on legs. Legs are first dipped in water, then dipped into instrument to each marked level then measured by Buxco edema software(Chen/Victor). Data is recorded by one person, while the other is dipping the limb to marked area.

Blood-plasma protein measurements: Blood is drawn, spun, and serum separated prior to surgery and then at conclusion for total protein and Ca2+ comparison.

Limb Weight Comparison: After drawing blood, the animal is prepared for tissue collection. The limbs are amputated using a quillitine, then both experimental and control legs are cut at the ligature and weighed. A second weighing is done as the tibio-cacaneal joint is disarticulated and the foot is weighed.

Histological Preparations: The transverse muscle located behind the knee (popliteal)

area is dissected and arranged in a metal mold. filled with freezeGel, dipped into cold methylbutane, placed into labeled sample bags at - 80EC until sectioning. Upon sectioning, the muscle is observed under fluorescent microscopy for lymphatics..

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 30: Suppression of TNF alpha-induced adhesion molecule expression by a Agonist or Antagonist of the Invention

The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Tumor necrosis factor alpha (TNF-a), a potent proinflammatory cytokine, is a stimulator of all three CAMs on endothelial cells and may be involved in a wide variety of inflammatory responses, often resulting in a pathological outcome.

The potential of an agonist or antagonist of the invention to mediate a suppression of TNF-a induced CAM expression can be examined. A modified ELISA assay which uses ECs as a solid phase absorbent is employed to measure the amount of CAM expression on TNF-a treated ECs when co-stimulated with a member of the FGF family of proteins.

To perform the experiment, human umbilical vein endothelial cell (HUVEC) cultures are obtained from pooled cord harvests and maintained in growth medium (EGM-2; Clonetics. San Diego, CA) supplemented with 10% FCS and 1% penicillin/streptomycin in a 37 degree C humidified incubator containing 5% CO_2. HUVECs are seeded in 96-well plates at concentrations of 1×10^4 cells/well in EGM medium at 37 degree C for 18-24 hrs or

until confluent. The monolayers are subsequently washed 3 times with a serum-free solution of RPMI-1640 supplemented with 100 U/ml penicillin and 100 mg/ml streptomycin, and treated with a given cytokine and/or growth factor(s) for 24 h at 37 degree C. Following incubation. the cells are then evaluated for CAM expression.

Human Umbilical Vein Endothelial cells (HUVECs) are grown in a standard 96 well plate to confluence. Growth medium is removed from the cells and replaced with 90 ul of 199 Medium (10% FBS). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 ul volumes). Plates are incubated at 37 degree C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100 µl of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min.

Fixative is then removed from the wells and wells are washed 1X with PBS(+Ca,Mg)+0.5% BSA and drained. Do not allow the wells to dry. Add 10 µl of diluted primary antibody to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 µg/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA.

Then add 20 µl of diluted ExtrAvidin-Alkaline Phosphotase (1:5,000 dilution) to each well and incubated at 37°C for 30 min. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA. 1 tablet of p-Nitrophenol Phosphate pNPP is dissolved in 5 ml of glycine buffer (pH 10.4). 100 µl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphotase in glycine buffer: 1:5,000 (10^0) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 µl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 µl of pNNP reagent must then be added to each of the standard wells. The plate must be incubated at 37°C for 4h. A volume of 50 µl of 3M NaOH is added to all wells. The results are quantified on a plate reader at 405 nm. The background subtraction option is used on blank wells filled with glycine buffer only. The template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test

the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 31: Production Of Polypeptide of the Invention For High-Throughput Screening Assays

The following protocol produces a supernatant containing polypeptide of the present invention to be tested. This supernatant can then be used in the Screening Assays described in Examples 33-42.

First, dilute Poly-D-Lysine (644 587 Boehringer-Mannheim) stock solution (1mg/ml in PBS) 1:20 in PBS (w/o calcium or magnesium 17-516F Biowhittaker) for a working solution of 50ug/ml. Add 200 ul of this solution to each well (24 well plates) and incubate at RT for 20 minutes. Be sure to distribute the solution over each well (note: a 12-channel pipetter may be used with tips on every other channel). Aspirate off the Poly-D-Lysine solution and rinse with 1ml PBS (Phosphate Buffered Saline). The PBS should remain in the well until just prior to plating the cells and plates may be poly-lysine coated in advance for up to two weeks.

Plate 293T cells (do not carry cells past P+20) at 2 x 10^5 cells/well in .5ml DMEM(Dulbecco's Modified Eagle Medium)(with 4.5 G/L glucose and L-glutamine (12-604F Biowhittaker))/10% heat inactivated FBS(14-503F Biowhittaker)/1x Penstrep(17-602E Biowhittaker). Let the cells grow overnight.

The next day, mix together in a sterile solution basin: 300 ul Lipofectamine (18324-012 Gibco/BRL) and 5ml Optimem I (31985070 Gibco/BRL)/96-well plate. With a small volume multi-channel pipetter, aliquot approximately 2ug of an expression vector containing a polynucleotide insert, produced by the methods described in Examples 8-10, into an appropriately labeled 96-well round bottom plate. With a multi-channel pipetter, add 50ul of the Lipofectamine/Optimem I mixture to each well. Pipette up and down gently to mix. Incubate at RT 15-45 minutes. After about 20 minutes, use a multi-channel pipetter to add 150ul Optimem I to each well. As a control, one plate of vector DNA lacking an insert should be transfected with each set of transfections.

Preferably, the transfection should be performed by tag-teaming the following tasks. By tag-teaming, hands on time is cut in half, and the cells do not spend too much time on PBS. First, person A aspirates off the media from four 24-well plates of cells, and then

person B rinses each well with .5-1ml PBS. Person A then aspirates off PBS rinse, and person B, using a12-channel pipetter with tips on every other channel, adds the 200ul of DNA/Lipofectamine/Optimem I complex to the odd wells first, then to the even wells, to each row on the 24-well plates. Incubate at 37 degree C for 6 hours.

While cells are incubating, prepare appropriate media, either 1%BSA in DMEM with 1x penstrep, or HGS CHO-5 media (116.6 mg/L of CaCl2 (anhyd); 0.00130 mg/L $CuSO_4$-$5H_2O$; 0.050 mg/L of $Fe(NO_3)_3$-$9H_2O$; 0.417 mg/L of $FeSO_4$-$7H_2O$; 311.80 mg/L of Kcl; 28.64 mg/L of $MgCl_2$; 48.84 mg/L of $MgSO_4$; 6995.50 mg/L of NaCl: 2400.0 mg/L of $NaHCO_3$; 62.50 mg/L of NaH_2PO_4-H_20; 71.02 mg/L of Na_2HPO4; .4320 mg/L of $ZnSO_4$-$7H_2O$; .002 mg/L of Arachidonic Acid ; 1.022 mg/L of Cholesterol; .070 mg/L of DL-alpha-Tocopherol-Acetate; 0.0520 mg/L of Linoleic Acid; 0.010 mg/L of Linolenic Acid; 0.010 mg/L of Myristic Acid; 0.010 mg/L of Oleic Acid; 0.010 mg/L of Palmitric Acid; 0.010 mg/L of Palmitic Acid; 100 mg/L of Pluronic F-68; 0.010 mg/L of Stearic Acid; 2.20 mg/L of Tween 80; 4551 mg/L of D-Glucose; 130.85 mg/ml of L- Alanine; 147.50 mg/ml of L-Arginine-HCL; 7.50 mg/ml of L-Asparagine-H_20; 6.65 mg/ml of L-Aspartic Acid; 29.56 mg/ml of L-Cystine-2HCL-H_20; 31.29 mg/ml of L-Cystine-2HCL; 7.35 mg/ml of L-Glutamic Acid; 365.0 mg/ml of L-Glutamine; 18.75 mg/ml of Glycine; 52.48 mg/ml of L-Histidine-HCL-H_20; 106.97 mg/ml of L-Isoleucine; 111.45 mg/ml of L-Leucine; 163.75 mg/ml of L-Lysine HCL; 32.34 mg/ml of L-Methionine; 68.48 mg/ml of L-Phenylalainine; 40.0 mg/ml of L-Proline; 26.25 mg/ml of L-Serine; 101.05 mg/ml of L-Threonine; 19.22 mg/ml of L-Tryptophan; 91.79 mg/ml of L-Tryrosine-2Na-$2H_20$; and 99.65 mg/ml of L-Valine; 0.0035 mg/L of Biotin; 3.24 mg/L of D-Ca Pantothenate; 11.78 mg/L of Choline Chloride; 4.65 mg/L of Folic Acid; 15.60 mg/L of i-Inositol; 3.02 mg/L of Niacinamide; 3.00 mg/L of Pyridoxal HCL; 0.031 mg/L of Pyridoxine HCL; 0.319 mg/L of Riboflavin; 3.17 mg/L of Thiamine HCL; 0.365 mg/L of Thymidine; 0.680 mg/L of Vitamin B_{12}; 25 mM of HEPES Buffer; 2.39 mg/L of Na Hypoxanthine; 0.105 mg/L of Lipoic Acid; 0.081 mg/L of Sodium Putrescine-2HCL; 55.0 mg/L of Sodium Pyruvate; 0.0067 mg/L of Sodium Selenite; 20uM of Ethanolamine; 0.122 mg/L of Ferric Citrate; 41.70 mg/L of Methyl-B-Cyclodextrin complexed with Linoleic Acid; 33.33 mg/L of Methyl-B-Cyclodextrin complexed with Oleic Acid; 10 mg/L of Methyl-B-Cyclodextrin complexed with Retinal Acetate. Adjust

osmolarity to 327 mOsm) with 2mm glutamine and 1x penstrep. (BSA (81-068-3 Bayer) 100gm dissolved in 1L DMEM for a 10% BSA stock solution). Filter the media and collect 50 ul for endotoxin assay in 15ml polystyrene conical.

The transfection reaction is terminated, preferably by tag-teaming, at the end of the incubation period. Person A aspirates off the transfection media, while person B adds 1.5ml appropriate media to each well. Incubate at 37 degree C for 45 or 72 hours depending on the media used: 1%BSA for 45 hours or CHO-5 for 72 hours.

On day four, using a 300ul multichannel pipetter, aliquot 600ul in one 1ml deep well plate and the remaining supernatant into a 2ml deep well. The supernatants from each well can then be used in the assays described in Examples 33-40.

It is specifically understood that when activity is obtained in any of the assays described below using a supernatant, the activity originates from either the polypeptide of the present invention directly (e.g., as a secreted protein) or by polypeptide of the present invention inducing expression of other proteins, which are then secreted into the supernatant. Thus, the invention further provides a method of identifying the protein in the supernatant characterized by an activity in a particular assay.

Example 32: Construction of GAS Reporter Construct

One signal transduction pathway involved in the differentiation and proliferation of cells is called the Jaks-STATs pathway. Activated proteins in the Jaks-STATs pathway bind to gamma activation site "GAS" elements or interferon-sensitive responsive element ("ISRE"), located in the promoter of many genes. The binding of a protein to these elements alter the expression of the associated gene.

GAS and ISRE elements are recognized by a class of transcription factors called Signal Transducers and Activators of Transcription, or "STATs." There are six members of the STATs family. Stat1 and Stat3 are present in many cell types, as is Stat2 (as response to IFN-alpha is widespread). Stat4 is more restricted and is not in many cell types though it has been found in T helper class I, cells after treatment with IL-12. Stat5 was originally called mammary growth factor, but has been found at higher concentrations in other cells including myeloid cells. It can be activated in tissue culture cells by many cytokines.

The STATs are activated to translocate from the cytoplasm to the nucleus upon

tyrosine phosphorylation by a set of kinases known as the Janus Kinase ("Jaks") family. Jaks represent a distinct family of soluble tyrosine kinases and include Tyk2, Jak1, Jak2. and Jak3. These kinases display significant sequence similarity and are generally catalytically inactive in resting cells.

The Jaks are activated by a wide range of receptors summarized in the Table below. (Adapted from review by Schidler and Darnell, Ann. Rev. Biochem. 64:621-51 (1995).) A cytokine receptor family, capable of activating Jaks, is divided into two groups: (a) Class 1 includes receptors for IL-2, IL-3, IL-4, IL-6, IL-7, IL-9, IL-11, IL-12, IL-15, Epo, PRL, GH, G-CSF, GM-CSF, LIF, CNTF, and thrombopoietin; and (b) Class 2 includes IFN-a, IFN-g, and IL-10. The Class 1 receptors share a conserved cysteine motif (a set of four conserved cysteines and one tryptophan) and a WSXWS motif (a membrane proximal region encoding Trp-Ser-Xxx-Trp-Ser (SEQ ID NO:1548)).

Thus, on binding of a ligand to a receptor, Jaks are activated, which in turn activate STATs, which then translocate and bind to GAS elements. This entire process is encompassed in the Jaks-STATs signal transduction pathway.

Therefore, activation of the Jaks-STATs pathway, reflected by the binding of the GAS or the ISRE element, can be used to indicate proteins involved in the proliferation and differentiation of cells. For example, growth factors and cytokines are known to activate the Jaks-STATs pathway. (See Table below.) Thus, by using GAS elements linked to reporter molecules, activators of the Jaks-STATs pathway can be identified.

		JAKs			STATS	GAS(elements) or ISRE
Ligand	tvk2	Jak1	Jak2	Jak3		
IFN family						
IFN-a/B	+	+	-	-	1,2,3	ISRE
IFN-g (IRF1>Lys6>IFP)		+	+	-	1	GAS
Il-10	+	?	?	-	1,3	
gp130 family						
IL-6 (Pleiotrohic) (IRF1>Lys6>IFP)	+	+	+	?	1,3	GAS
Il-11(Pleiotrohic)	?	+	?	?	1,3	
OnM(Pleiotrohic)	?	+	+	?	1,3	
LIF(Pleiotrohic)	?	+	+	?	1,3	
CNTF(Pleiotrohic)	-/+	+	+	?	1,3	
G-CSF(Pleiotrohic)	?	+	?	?	1,3	
IL-12(Pleiotrohic)	+	-	+	+	1,3	
g-C family						
IL-2 (lymphocytes)	-	+	-	+	1,3,5	GAS
IL-4 (lymph/myeloid)	-	+	-	+	6	GAS (IRF1 = IFP >>Ly6)(IgH)
IL-7 (lymphocytes)	-	+	-	+	5	GAS
IL-9 (lymphocytes)	-	+	-	+	5	GAS
IL-13 (lymphocyte)	-	+	?	?	6	GAS
IL-15	?	+	?	+	5	GAS
gp140 family						
IL-3 (myeloid) (IRF1>IFP>>Ly6)	-	-	+	-	5	GAS
IL-5 (myeloid)	-	-	+	-	5	GAS
GM-CSF (myeloid)	-	-	+	-	5	GAS

Growth hormone family						
GH	?	-	+	-	5	
PRL	?	+/-	+	-	1,3,5	
EPO	?	-	+	-	5	GAS(B-CAS>IRF1=IFP>>Ly6)
Receptor Tyrosine Kinases						
EGF	?	+	+	-	1,3	GAS (IRF1)
PDGF	?	+	+	-	1,3	
CSF-1	?	+	+	-	1,3	GAS (not IRF1)

To construct a synthetic GAS containing promoter element, which is used in the Biological Assays described in Examples 33-34, a PCR based strategy is employed to generate a GAS-SV40 promoter sequence. The 5' primer contains four tandem copies of the GAS binding site found in the IRF1 promoter and previously demonstrated to bind STATs upon induction with a range of cytokines (Rothman et al., Immunity 1:457-468 (1994).), although other GAS or ISRE elements can be used instead. The 5' primer also contains 18bp of sequence complementary to the SV40 early promoter sequence and is flanked with an XhoI site. The sequence of the 5' primer is:

5':GCGCCTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCC GAAATGATTTCCCCGAAATATCTGCCATCTCAATTAG:3' (SEQ ID NO:1549)

The downstream primer is complementary to the SV40 promoter and is flanked with a Hind III site: 5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO:1550)

PCR amplification is performed using the SV40 promoter template present in the B-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI/Hind III and subcloned into BLSK2-. (Stratagene.) Sequencing with forward and reverse primers confirms that the insert contains the following sequence:

5':CTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCGAAA TGATTTCCCCGAAATATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCG CCCCTAACTCCGCCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCT CCGCCCCATGGCTGACTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCC TCGGCCTCTGAGCTATTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTA GGCTTTTGCAAAAAGCTT:3' (SEQ ID NO:1551)

With this GAS promoter element linked to the SV40 promoter, a GAS:SEAP2 reporter construct is next engineered. Here, the reporter molecule is a secreted alkaline phosphatase, or "SEAP." Clearly, however, any reporter molecule can be instead of SEAP, in this or in any of the other Examples. Well known reporter molecules that can be used instead of SEAP include chloramphenicol

acetyltransferase (CAT), luciferase, alkaline phosphatase, B-galactosidase, green fluorescent protein (GFP), or any protein detectable by an antibody.

The above sequence confirmed synthetic GAS-SV40 promoter element is subcloned into the pSEAP-Promoter vector obtained from Clontech using HindIII and XhoI, effectively replacing the SV40 promoter with the amplified GAS:SV40 promoter element, to create the GAS-SEAP vector. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

Thus, in order to generate mammalian stable cell lines expressing the GAS-SEAP reporter, the GAS-SEAP cassette is removed from the GAS-SEAP vector using SalI and NotI, and inserted into a backbone vector containing the neomycin resistance gene, such as pGFP-1 (Clontech), using these restriction sites in the multiple cloning site, to create the GAS-SEAP/Neo vector. Once this vector is transfected into mammalian cells, this vector can then be used as a reporter molecule for GAS binding as described in Examples 33-34.

Other constructs can be made using the above description and replacing GAS with a different promoter sequence. For example, construction of reporter molecules containing NFK-B and EGR promoter sequences are described in Examples 35 and 36. However, many other promoters can be substituted using the protocols described in these Examples. For instance, SRE, IL-2, NFAT, or Osteocalcin promoters can be substituted, alone or in combination (e.g., GAS/NF-KB/EGR, GAS/NF-KB, Il-2/NFAT, or NF-KB/GAS). Similarly, other cell lines can be used to test reporter construct activity, such as HELA (epithelial), HUVEC (endothelial), Reh (B-cell), Saos-2 (osteoblast), HUVAC (aortic), or Cardiomyocyte.

Example 33: High-Throughput Screening Assay for T-cell Activity.

The following protocol is used to assess T-cell activity by identifying factors, and determining whether supernate containing a polypeptide of the invention proliferates and/or differentiates T-cells. T-cell activity is assessed using the

GAS/SEAP/Neo construct produced in Example 32. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The T-cell used in this assay is Jurkat T-cells (ATCC Accession No. TIB-152), although Molt-3 cells (ATCC Accession No. CRL-1552) and Molt-4 cells (ATCC Accession No. CRL-1582) cells can also be used.

Jurkat T-cells are lymphoblastic CD4+ Th1 helper cells. In order to generate stable cell lines, approximately 2 million Jurkat cells are transfected with the GAS-SEAP/neo vector using DMRIE-C (Life Technologies)(transfection procedure described below). The transfected cells are seeded to a density of approximately 20,000 cells per well and transfectants resistant to 1 mg/ml genticin selected. Resistant colonies are expanded and then tested for their response to increasing concentrations of interferon gamma. The dose response of a selected clone is demonstrated.

Specifically, the following protocol will yield sufficient cells for 75 wells containing 200 ul of cells. Thus, it is either scaled up, or performed in multiple to generate sufficient cells for multiple 96 well plates. Jurkat cells are maintained in RPMI + 10% serum with 1%Pen-Strep. Combine 2.5 mls of OPTI-MEM (Life Technologies) with 10 ug of plasmid DNA in a T25 flask. Add 2.5 ml OPTI-MEM containing 50 ul of DMRIE-C and incubate at room temperature for 15-45 mins.

During the incubation period, count cell concentration, spin down the required number of cells (10^7 per transfection), and resuspend in OPTI-MEM to a final concentration of 10^7 cells/ml. Then add 1ml of 1 x 10^7 cells in OPTI-MEM to T25 flask and incubate at 37 degree C for 6 hrs. After the incubation, add 10 ml of RPMI + 15% serum.

The Jurkat:GAS-SEAP stable reporter lines are maintained in RPMI + 10% serum, 1 mg/ml Genticin, and 1% Pen-Strep. These cells are treated with supernatants containing polypeptide of the present invention or polypeptide of the present invention induced polypeptides as produced by the protocol described in Example 31.

On the day of treatment with the supernatant, the cells should be washed and

resuspended in fresh RPMI + 10% serum to a density of 500.000 cells per ml. The exact number of cells required will depend on the number of supernatants being screened. For one 96 well plate. approximately 10 million cells (for 10 plates. 100 million cells) are required.

Transfer the cells to a triangular reservoir boat, in order to dispense the cells into a 96 well dish. using a 12 channel pipette. Using a 12 channel pipette. transfer 200 ul of cells into each well (therefore adding 100, 000 cells per well).

After all the plates have been seeded, 50 ul of the supernatants are transferred directly from the 96 well plate containing the supernatants into each well using a 12 channel pipette. In addition, a dose of exogenous interferon gamma (0.1, 1.0, 10 ng) is added to wells H9. H10. and H11 to serve as additional positive controls for the assay.

The 96 well dishes containing Jurkat cells treated with supernatants are placed in an incubator for 48 hrs (note: this time is variable between 48-72 hrs). 35 ul samples from each well are then transferred to an opaque 96 well plate using a 12 channel pipette. The opaque plates should be covered (using sellophene covers) and stored at -20 degree C until SEAP assays are performed according to Example 37. The plates containing the remaining treated cells are placed at 4 degree C and serve as a source of material for repeating the assay on a specific well if desired.

As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate Jurkat T cells. Over 30 fold induction is typically observed in the positive control wells.

The above protocol may be used in the generation of both transient, as well as, stable transfected cells, which would be apparent to those of skill in the art.

Example 34: High-Throughput Screening Assay Identifying Myeloid Activity

The following protocol is used to assess myeloid activity of polypeptide of the present invention by determining whether polypeptide of the present invention proliferates and/or differentiates myeloid cells. Myeloid cell activity is assessed using

the GAS/SEAP/Neo construct produced in Example 32. Thus. factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The myeloid cell used in this assay is U937, a pre-monocyte cell line, although TF-1, HL60, or KG1 can be used.

To transiently transfect U937 cells with the GAS/SEAP/Neo construct produced in Example 32, a DEAE-Dextran method (Kharbanda et. al., 1994, Cell Growth & Differentiation, 5:259-265) is used. First, harvest 2x10e^7 U937 cells and wash with PBS. The U937 cells are usually grown in RPMI 1640 medium containing 10% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 mg/ml streptomycin.

Next. suspend the cells in 1 ml of 20 mM Tris-HCl (pH 7.4) buffer containing 0.5 mg/ml DEAE-Dextran, 8 ug GAS-SEAP2 plasmid DNA, 140 mM NaCl, 5 mM KCl, 375 uM $Na_2HPO_4.7H_2O$, 1 mM $MgCl_2$, and 675 uM $CaCl_2$. Incubate at 37 degrees C for 45 min.

Wash the cells with RPMI 1640 medium containing 10% FBS and then resuspend in 10 ml complete medium and incubate at 37 degree C for 36 hr.

The GAS-SEAP/U937 stable cells are obtained by growing the cells in 400 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 400 ug/ml G418 for couple of passages.

These cells are tested by harvesting $1x10^8$ cells (this is enough for ten 96-well plates assay) and wash with PBS. Suspend the cells in 200 ml above described growth medium, with a final density of $5x10^5$ cells/ml. Plate 200 ul cells per well in the 96-well plate (or $1x10^5$ cells/well).

Add 50 ul of the supernatant prepared by the protocol described in Example 31. Incubate at 37 degee C for 48 to 72 hr. As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate U937 cells. Over 30 fold induction is typically observed in the positive control wells. SEAP assay the supernatant according to the protocol described in Example 37.

Example 35: High-Throughput Screening Assay Identifying Neuronal Activity.

When cells undergo differentiation and proliferation, a group of genes are activated through many different signal transduction pathways. One of these genes, EGR1 (early growth response gene 1), is induced in various tissues and cell types upon activation. The promoter of EGR1 is responsible for such induction. Using the EGR1 promoter linked to reporter molecules, activation of cells can be assessed by polypeptide of the present invention.

Particularly, the following protocol is used to assess neuronal activity in PC12 cell lines. PC12 cells (rat phenochromocytoma cells) are known to proliferate and/or differentiate by activation with a number of mitogens, such as TPA (tetradecanoyl phorbol acetate), NGF (nerve growth factor), and EGF (epidermal growth factor). The EGR1 gene expression is activated during this treatment. Thus, by stably transfecting PC12 cells with a construct containing an EGR promoter linked to SEAP reporter, activation of PC12 cells by polypeptide of the present invention can be assessed.

The EGR/SEAP reporter construct can be assembled by the following protocol. The EGR-1 promoter sequence (-633 to +1)(Sakamoto K et al., Oncogene 6:867-871 (1991)) can be PCR amplified from human genomic DNA using the following primers:

5' GCGCTCGAGGGATGACAGCGATAGAACCCCGG -3' (SEQ ID NO: 1552)

5' GCGAAGCTTCGCGACTCCCCGGATCCGCCTC-3' (SEQ ID NO: 1553)

Using the GAS:SEAP/Neo vector produced in Example 32, EGR1 amplified product can then be inserted into this vector. Linearize the GAS:SEAP/Neo vector using restriction enzymes XhoI/HindIII, removing the GAS/SV40 stuffer. Restrict the EGR1 amplified product with these same enzymes. Ligate the vector and the EGR1 promoter.

To prepare 96 well-plates for cell culture, two mls of a coating solution (1:30 dilution of collagen type I (Upstate Biotech Inc. Cat#08-115) in 30% ethanol (filter

sterilized)) is added per one 10 cm plate or 50 ml per well of the 96-well plate, and allowed to air dry for 2 hr.

PC12 cells are routinely grown in RPMI-1640 medium (Bio Whittaker) containing 10% horse serum (JRH BIOSCIENCES, Cat. # 12449-78P), 5% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 ug/ml streptomycin on a precoated 10 cm tissue culture dish. One to four split is done every three to four days. Cells are removed from the plates by scraping and resuspended with pipetting up and down for more than 15 times.

Transfect the EGR/SEAP/Neo construct into PC12 using the Lipofectamine protocol described in Example 31. EGR-SEAP/PC12 stable cells are obtained by growing the cells in 300 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 300 ug/ml G418 for couple of passages.

To assay for neuronal activity, a 10 cm plate with cells around 70 to 80% confluent is screened by removing the old medium. Wash the cells once with PBS (Phosphate buffered saline). Then starve the cells in low serum medium (RPMI-1640 containing 1% horse serum and 0.5% FBS with antibiotics) overnight.

The next morning, remove the medium and wash the cells with PBS. Scrape off the cells from the plate, suspend the cells well in 2 ml low serum medium. Count the cell number and add more low serum medium to reach final cell density as $5x10^5$ cells/ml.

Add 200 ul of the cell suspension to each well of 96-well plate (equivalent to $1x10^5$ cells/well). Add 50 ul supernatant produced by Example 31, 37 degree C for 48 to 72 hr. As a positive control, a growth factor known to activate PC12 cells through EGR can be used, such as 50 ng/ul of Neuronal Growth Factor (NGF). Over fifty-fold induction of SEAP is typically seen in the positive control wells. SEAP assay the supernatant according to Example 37.

Example 36: High-Throughput Screening Assay for T-cell Activity

NF-KB (Nuclear Factor KB) is a transcription factor activated by a wide variety of agents including the inflammatory cytokines IL-1 and TNF. CD30 and CD40, lymphotoxin-alpha and lymphotoxin-beta, by exposure to LPS or thrombin, and by expression of certain viral gene products. As a transcription factor. NF-KB regulates the expression of genes involved in immune cell activation, control of apoptosis (NF- KB appears to shield cells from apoptosis), B and T-cell development, anti-viral and antimicrobial responses, and multiple stress responses.

In non-stimulated conditions, NF- KB is retained in the cytoplasm with I-KB (Inhibitor KB). However, upon stimulation, I- KB is phosphorylated and degraded, causing NF- KB to shuttle to the nucleus, thereby activating transcription of target genes. Target genes activated by NF- KB include IL-2, IL-6, GM-CSF, ICAM-1 and class I MHC.

Due to its central role and ability to respond to a range of stimuli, reporter constructs utilizing the NF-KB promoter element are used to screen the supernatants produced in Example 31. Activators or inhibitors of NF-KB would be useful in treating, preventing, and/or diagnosing diseases. For example, inhibitors of NF-KB could be used to treat those diseases related to the acute or chronic activation of NF-KB, such as rheumatoid arthritis.

To construct a vector containing the NF-KB promoter element, a PCR based strategy is employed. The upstream primer contains four tandem copies of the NF-KB binding site (GGGGACTTTCCC) (SEQ ID NO:1554), 18 bp of sequence complementary to the 5' end of the SV40 early promoter sequence, and is flanked with an XhoI site:

5':GCGGCCTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGAC TTTCCATCCTGCCATCTCAATTAG:3' (SEQ ID NO:1555)

The downstream primer is complementary to the 3' end of the SV40 promoter and is flanked with a Hind III site:

5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO:1550)

PCR amplification is performed using the SV40 promoter template present in the pB-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is

digested with XhoI and Hind III and subcloned into BLSK2-. (Stratagene) Sequencing with the T7 and T3 primers confirms the insert contains the following sequence:

5':CTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGACTTTCC
ATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCC
ATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCTCCGCCCCATGGCTGA
CTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTA
TTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGCAAAAA
GCTT:3' (SEQ ID NO:1556)

Next, replace the SV40 minimal promoter element present in the pSEAP2-promoter plasmid (Clontech) with this NF-KB/SV40 fragment using XhoI and HindIII. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

In order to generate stable mammalian cell lines, the NF-KB/SV40/SEAP cassette is removed from the above NF-KB/SEAP vector using restriction enzymes SalI and NotI, and inserted into a vector containing neomycin resistance. Particularly, the NF-KB/SV40/SEAP cassette was inserted into pGFP-1 (Clontech), replacing the GFP gene, after restricting pGFP-1 with SalI and NotI.

Once NF-KB/SV40/SEAP/Neo vector is created, stable Jurkat T-cells are created and maintained according to the protocol described in Example 33. Similarly, the method for assaying supernatants with these stable Jurkat T-cells is also described in Example 33. As a positive control, exogenous TNF alpha (0.1,1, 10 ng) is added to wells H9, H10, and H11, with a 5-10 fold activation typically observed.

Example 37: Assay for SEAP Activity

As a reporter molecule for the assays described in Examples 33-36, SEAP activity is assayed using the Tropix Phospho-light Kit (Cat. BP-400) according to the following general procedure. The Tropix Phospho-light Kit supplies the Dilution, Assay, and Reaction Buffers used below.

Prime a dispenser with the 2.5x Dilution Buffer and dispense 15 ul of 2.5x dilution buffer into Optiplates containing 35 ul of a supernatant. Seal the plates with a plastic sealer and incubate at 65 degree C for 30 min. Separate the Optiplates to avoid uneven heating.

Cool the samples to room temperature for 15 minutes. Empty the dispenser and prime with the Assay Buffer. Add 50 ml Assay Buffer and incubate at room temperature 5 min. Empty the dispenser and prime with the Reaction Buffer (see the table below). Add 50 ul Reaction Buffer and incubate at room temperature for 20 minutes. Since the intensity of the chemiluminescent signal is time dependent, and it takes about 10 minutes to read 5 plates on luminometer, one should treat 5 plates at each time and start the second set 10 minutes later.

Read the relative light unit in the luminometer. Set H12 as blank, and print the results. An increase in chemiluminescence indicates reporter activity.

Reaction Buffer Formulation:

# of plates	Rxn buffer diluent (ml)	CSPD (ml)
10	60	3
11	65	3.25
12	70	3.5
13	75	3.75
14	80	4
15	85	4.25
16	90	4.5
17	95	4.75
18	100	5
19	105	5.25
20	110	5.5
21	115	5.75
22	120	6
23	125	6.25
24	130	6.5

25	135	6.75
26	140	7
27	145	7.25
28	150	7.5
29	155	7.75
30	160	8
31	165	8.25
32	170	8.5
33	175	8.75
34	180	9
35	185	9.25
36	190	9.5
37	195	9.75
38	200	10
39	205	10.25
40	210	10.5
41	215	10.75
42	220	11
43	225	11.25
44	230	11.5
45	235	11.75
46	240	12
47	245	12.25
48	250	12.5
49	255	12.75
50	260	13

Example 38: High-Throughput Screening Assay Identifying Changes in Small Molecule Concentration and Membrane Permeability

Binding of a ligand to a receptor is known to alter intracellular levels of small molecules, such as calcium, potassium, sodium, and pH. as well as alter membrane potential. These alterations can be measured in an assay to identify supernatants which bind to receptors of a particular cell. Although the following protocol

describes an assay for calcium, this protocol can easily be modified to detect changes in potassium, sodium, pH, membrane potential, or any other small molecule which is detectable by a fluorescent probe.

The following assay uses Fluorometric Imaging Plate Reader ("FLIPR") to measure changes in fluorescent molecules (Molecular Probes) that bind small molecules. Clearly, any fluorescent molecule detecting a small molecule can be used instead of the calcium fluorescent molecule, fluo-4 (Molecular Probes, Inc.; catalog no. F-14202), used here.

For adherent cells, seed the cells at 10,000 -20,000 cells/well in a Co-star black 96-well plate with clear bottom. The plate is incubated in a CO_2 incubator for 20 hours. The adherent cells are washed two times in Biotek washer with 200 ul of HBSS (Hank's Balanced Salt Solution) leaving 100 ul of buffer after the final wash.

A stock solution of 1 mg/ml fluo-4 is made in 10% pluronic acid DMSO. To load the cells with fluo-4 , 50 ul of 12 ug/ml fluo-4 is added to each well. The plate is incubated at 37 degrees C in a CO_2 incubator for 60 min. The plate is washed four times in the Biotek washer with HBSS leaving 100 ul of buffer.

For non-adherent cells, the cells are spun down from culture media. Cells are re-suspended to 2-5x10^6 cells/ml with HBSS in a 50-ml conical tube. 4 ul of 1 mg/ml fluo-4 solution in 10% pluronic acid DMSO is added to each ml of cell suspension. The tube is then placed in a 37 degrees C water bath for 30-60 min. The cells are washed twice with HBSS, resuspended to 1x10^6 cells/ml, and dispensed into a microplate, 100 ul/well. The plate is centrifuged at 1000 rpm for 5 min. The plate is then washed once in Denley Cell Wash with 200 ul, followed by an aspiration step to 100 ul final volume.

For a non-cell based assay, each well contains a fluorescent molecule, such as fluo-4 . The supernatant is added to the well, and a change in fluorescence is detected.

To measure the fluorescence of intracellular calcium, the FLIPR is set for the following parameters: (1) System gain is 300-800 mW; (2) Exposure time is 0.4 second; (3) Camera F/stop is F/2; (4) Excitation is 488 nm; (5) Emission is 530 nm;

and (6) Sample addition is 50 ul. Increased emission at 530 nm indicates an extracellular signaling event caused by the a molecule. either polypeptide of the present invention or a molecule induced by polypeptide of the present invention, which has resulted in an increase in the intracellular Ca^{++} concentration.

Example 40: High-Throughput Screening Assay Identifying Tyrosine Kinase Activity

The Protein Tyrosine Kinases (PTK) represent a diverse group of transmembrane and cytoplasmic kinases. Within the Receptor Protein Tyrosine Kinase RPTK) group are receptors for a range of mitogenic and metabolic growth factors including the PDGF, FGF, EGF, NGF, HGF and Insulin receptor subfamilies. In addition there are a large family of RPTKs for which the corresponding ligand is unknown. Ligands for RPTKs include mainly secreted small proteins, but also membrane-bound and extracellular matrix proteins.

Activation of RPTK by ligands involves ligand-mediated receptor dimerization, resulting in transphosphorylation of the receptor subunits and activation of the cytoplasmic tyrosine kinases. The cytoplasmic tyrosine kinases include receptor associated tyrosine kinases of the src-family (e.g., src, yes, lck, lyn, fyn) and non-receptor linked and cytosolic protein tyrosine kinases, such as the Jak family, members of which mediate signal transduction triggered by the cytokine superfamily of receptors (e.g., the Interleukins, Interferons, GM-CSF, and Leptin).

Because of the wide range of known factors capable of stimulating tyrosine kinase activity, identifying whether polypeptide of the present invention or a molecule induced by polypeptide of the present invention is capable of activating tyrosine kinase signal transduction pathways is of interest. Therefore, the following protocol is designed to identify such molecules capable of activating the tyrosine kinase signal transduction pathways.

Seed target cells (e.g., primary keratinocytes) at a density of approximately 25,000 cells per well in a 96 well Loprodyne Silent Screen Plates purchased from Nalge Nunc (Naperville, IL). The plates are sterilized with two 30 minute rinses with

100% ethanol. rinsed with water and dried overnight. Some plates are coated for 2 hr with 100 ml of cell culture grade type I collagen (50 mg/ml). gelatin (2%) or polylysine (50 mg/ml), all of which can be purchased from Sigma Chemicals (St. Louis, MO) or 10% Matrigel purchased from Becton Dickinson (Bedford,MA), or calf serum. rinsed with PBS and stored at 4 degree C. Cell growth on these plates is assayed by seeding 5,000 cells/well in growth medium and indirect quantitation of cell number through use of alamarBlue as described by the manufacturer Alamar Biosciences. Inc. (Sacramento, CA) after 48 hr. Falcon plate covers #3071 from Becton Dickinson (Bedford,MA) are used to cover the Loprodyne Silent Screen Plates. Falcon Microtest III cell culture plates can also be used in some proliferation experiments.

To prepare extracts, A431 cells are seeded onto the nylon membranes of Loprodyne plates (20,000/200ml/well) and cultured overnight in complete medium. Cells are quiesced by incubation in serum-free basal medium for 24 hr. After 5-20 minutes treatment with EGF (60ng/ml) or 50 ul of the supernatant produced in Example 31, the medium was removed and 100 ml of extraction buffer ((20 mM HEPES pH 7.5, 0.15 M NaCl, 1% Triton X-100, 0.1% SDS, 2 mM Na_3VO_4, 2 mM $Na_4P_2O_7$ and a cocktail of protease inhibitors (# 1836170) obtained from Boeheringer Mannheim (Indianapolis, IN) is added to each well and the plate is shaken on a rotating shaker for 5 minutes at 4^oC. The plate is then placed in a vacuum transfer manifold and the extract filtered through the 0.45 mm membrane bottoms of each well using house vacuum. Extracts are collected in a 96-well catch/assay plate in the bottom of the vacuum manifold and immediately placed on ice. To obtain extracts clarified by centrifugation, the content of each well, after detergent solubilization for 5 minutes, is removed and centrifuged for 15 minutes at 4 degree C at 16,000 x g.

Test the filtered extracts for levels of tyrosine kinase activity. Although many methods of detecting tyrosine kinase activity are known, one method is described here.

Generally, the tyrosine kinase activity of a supernatant is evaluated by

determining its ability to phosphorylate a tyrosine residue on a specific substrate (a biotinylated peptide). Biotinylated peptides that can be used for this purpose include PSK1 (corresponding to amino acids 6-20 of the cell division kinase cdc2-p34) and PSK2 (corresponding to amino acids 1-17 of gastrin). Both peptides are substrates for a range of tyrosine kinases and are available from Boehringer Mannheim.

The tyrosine kinase reaction is set up by adding the following components in order. First, add 10ul of 5uM Biotinylated Peptide, then 10ul ATP/Mg_{2+} (5mM ATP/50mM $MgCl_2$), then 10ul of 5x Assay Buffer (40mM imidazole hydrochloride, pH7.3, 40 mM beta-glycerophosphate, 1mM EGTA, 100mM $MgCl_2$, 5 mM $MnCl_2$, 0.5 mg/ml BSA), then 5ul of Sodium Vanadate(1mM), and then 5ul of water. Mix the components gently and preincubate the reaction mix at 30 degree C for 2 min. Initial the reaction by adding 10ul of the control enzyme or the filtered supernatant.

The tyrosine kinase assay reaction is then terminated by adding 10 ul of 120mm EDTA and place the reactions on ice.

Tyrosine kinase activity is determined by transferring 50 ul aliquot of reaction mixture to a microtiter plate (MTP) module and incubating at 37 degree C for 20 min. This allows the streptavadin coated 96 well plate to associate with the biotinylated peptide. Wash the MTP module with 300ul/well of PBS four times. Next add 75 ul of anti-phospotyrosine antibody conjugated to horse radish peroxidase(anti-P-Tyr-POD(0.5u/ml)) to each well and incubate at 37 degree C for one hour. Wash the well as above.

Next add 100ul of peroxidase substrate solution (Boehringer Mannheim) and incubate at room temperature for at least 5 mins (up to 30 min). Measure the absorbance of the sample at 405 nm by using ELISA reader. The level of bound peroxidase activity is quantitated using an ELISA reader and reflects the level of tyrosine kinase activity.

Example 41: High-Throughput Screening Assay Identifying Phosphorylation Activity

As a potential alternative and/or compliment to the assay of protein tyrosine

kinase activity described in Example 40. an assay which detects activation (phosphorylation) of major intracellular signal transduction intermediates can also be used. For example, as described below one particular assay can detect tyrosine phosphorylation of the Erk-1 and Erk-2 kinases. However, phosphorylation of other molecules, such as Raf, JNK, p38 MAP. Map kinase kinase (MEK), MEK kinase, Src, Muscle specific kinase (MuSK), IRAK, Tec, and Janus, as well as any other phosphoserine, phosphotyrosine, or phosphothreonine molecule, can be detected by substituting these molecules for Erk-1 or Erk-2 in the following assay.

Specifically, assay plates are made by coating the wells of a 96-well ELISA plate with 0.1ml of protein G (1ug/ml) for 2 hr at room temp, (RT). The plates are then rinsed with PBS and blocked with 3% BSA/PBS for 1 hr at RT. The protein G plates are then treated with 2 commercial monoclonal antibodies (100ng/well) against Erk-1 and Erk-2 (1 hr at RT) (Santa Cruz Biotechnology). (To detect other molecules, this step can easily be modified by substituting a monoclonal antibody detecting any of the above described molecules.) After 3-5 rinses with PBS, the plates are stored at 4 degree C until use.

A431 cells are seeded at 20,000/well in a 96-well Loprodyne filterplate and cultured overnight in growth medium. The cells are then starved for 48 hr in basal medium (DMEM) and then treated with EGF (6ng/well) or 50 ul of the supernatants obtained in Example 31 for 5-20 minutes. The cells are then solubilized and extracts filtered directly into the assay plate.

After incubation with the extract for 1 hr at RT, the wells are again rinsed. As a positive control, a commercial preparation of MAP kinase (10ng/well) is used in place of A431 extract. Plates are then treated with a commercial polyclonal (rabbit) antibody (1ug/ml) which specifically recognizes the phosphorylated epitope of the Erk-1 and Erk-2 kinases (1 hr at RT). This antibody is biotinylated by standard procedures. The bound polyclonal antibody is then quantitated by successive incubations with Europium-streptavidin and Europium fluorescence enhancing reagent in the Wallac DELFIA instrument (time-resolved fluorescence). An increased fluorescent signal over background indicates a phosphorylation by polypeptide of the

present invention or a molecule induced by polypeptide of the present invention.

Example 42: Assay for the Stimulation of Bone Marrow CD34+ Cell Proliferation

This assay is based on the ability of human CD34+ to proliferate in the presence of hematopoietic growth factors and evaluates the ability of isolated polypeptides expressed in mammalian cells to stimulate proliferation of CD34+ cells.

It has been previously shown that most mature precursors will respond to only a single signal. More immature precursors require at least two signals to respond. Therefore, to test the effect of polypeptides on hematopoietic activity of a wide range of progenitor cells, the assay contains a given polypeptide in the presence or absence of other hematopoietic growth factors. Isolated cells are cultured for 5 days in the presence of Stem Cell Factor (SCF) in combination with tested sample. SCF alone has a very limited effect on the proliferation of bone marrow (BM) cells, acting in such conditions only as a "survival" factor. However, combined with any factor exhibiting stimulatory effect on these cells (e.g., IL-3), SCF will cause a synergistic effect. Therefore, if the tested polypeptide has a stimulatory effect on a hematopoietic progenitors, such activity can be easily detected. Since normal BM cells have a low level of cycling cells, it is likely that any inhibitory effect of a given polypeptide, or agonists or antagonists thereof, might not be detected. Accordingly, assays for an inhibitory effect on progenitors is preferably tested in cells that are first subjected to *in vitro* stimulation with SCF+IL+3, and then contacted with the compound that is being evaluated for inhibition of such induced proliferation.

Briefly, CD34+ cells are isolated using methods known in the art. The cells are thawed and resuspended in medium (QBSF 60 serum-free medium with 1% L-glutamine (500ml) Quality Biological, Inc., Gaithersburg, MD Cat# 160-204-101). After several gentle centrifugation steps at 200 x g, cells are allowed to rest for one hour. The cell count is adjusted to 2.5 x 10^5 cells/ml. During this time, 100 μl of sterile water is added to the peripheral wells of a 96-well plate. The cytokines that can be tested with a given polypeptide in this assay is rhSCF (R&D Systems,

Minneapolis. MN. Cat# 255-SC) at 50 ng/ml alone and in combination with rhSCF and rhIL-3 (R&D Systems. Minneapolis, MN, Cat# 203-ML) at 30 ng/ml. After one hour, 10 μl of prepared cytokines, 50 μl of the supernatants prepared in Example 31 (supernatants at 1:2 dilution = 50 μl) and 20 μl of diluted cells are added to the media which is already present in the wells to allow for a final total volume of 100 μl. The plates are then placed in a 37°C/5% CO_2 incubator for five days.

Eighteen hours before the assay is harvested, 0.5 μCi/well of [3H] Thymidine is added in a 10 μl volume to each well to determine the proliferation rate. The experiment is terminated by harvesting the cells from each 96-well plate to a filtermat using the Tomtec Harvester 96. After harvesting, the filtermats are dried, trimmed and placed into OmniFilter assemblies consisting of one OmniFilter plate and one OmniFilter Tray. 60 μl Microscint is added to each well and the plate sealed with TopSeal-A press-on sealing film A bar code 15 sticker is affixed to the first plate for counting. The sealed plates is then loaded and the level of radioactivity determined via the Packard Top Count and the printed data collected for analysis. The level of radioactivity reflects the amount of cell proliferation.

The studies described in this example test the activity of a given polypeptide to stimulate bone marrow CD34+ cell proliferation. One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof. As a nonlimiting example, potential antagonists tested in this assay would be expected to inhibit cell proliferation in the presence of cytokines and/or to increase the inhibition of cell proliferation in the presence of cytokines and a given polypeptide. In contrast, potential agonists tested in this assay would be expected to enhance cell proliferation and/or to decrease the inhibition of cell proliferation in the presence of cytokines and a given polypeptide.

The ability of a gene to stimulate the proliferation of bone marrow CD34+ cells indicates that polynucleotides and polypeptides corresponding to the gene are useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and

"Infectious Disease" sections above. and elsewhere herein.

Example 43: Assay for Extracellular Matrix Enhanced Cell Response (EMECR)

The objective of the Extracellular Matrix Enhanced Cell Response (EMECR) assay is to identify gene products (e.g., isolated polypeptides) that act on the hematopoietic stem cells in the context of the extracellular matrix (ECM) induced signal.

Cells respond to the regulatory factors in the context of signal(s) received from the surrounding microenvironment. For example, fibroblasts, and endothelial and epithelial stem cells fail to replicate in the absence of signals from the ECM. Hematopoietic stem cells can undergo self-renewal in the bone marrow, but not in *in vitro* suspension culture. The ability of stem cells to undergo self-renewal *in vitro* is dependent upon their interaction with the stromal cells and the ECM protein fibronectin (fn). Adhesion of cells to fn is mediated by the $\alpha_5.\beta_1$ and $\alpha_4.\beta_1$ integrin receptors, which are expressed by human and mouse hematopoietic stem cells. The factor(s) which integrate with the ECM environment and responsible for stimulating stem cell self-renewal has not yet been identified. Discovery of such factors should be of great interest in gene therapy and bone marrow transplant applications

Briefly, polystyrene, non tissue culture treated, 96-well plates are coated with fn fragment at a coating concentration of 0.2 μg/ cm^2. Mouse bone marrow cells are plated (1,000 cells/well) in 0.2 ml of serum-free medium. Cells cultured in the presence of IL-3 (5 ng/ml) + SCF (50 ng/ml) would serve as the positive control, conditions under which little self-renewal but pronounced differentiation of the stem cells is to be expected. Gene products of the invention (e.g., including, but not limited to, polynucleotides and polypeptides of the present invention, and supernatants produced in Example 31), are tested with appropriate negative controls in the presence and absence of SCF(5.0 ng/ml), where test factor supernates represent 10% of the total assay volume. The plated cells are then allowed to grow by incubating in a low oxygen environment (5% CO_2, 7% O_2, and 88% N_2) tissue culture incubator

for 7 days. The number of proliferating cells within the wells is then quantitated by measuring thymidine incorporation into cellular DNA. Verification of the positive hits in the assay will require phenotypic characterization of the cells, which can be accomplished by scaling up of the culture system and using appropriate antibody reagents against cell surface antigens and FACScan.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

If a particular polypeptide of the present invention is found to be a stimulator of hematopoietic progenitors, polynucleotides and polypeptides corresponding to the gene encoding said polypeptide may be useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein. The gene product may also be useful in the expansion of stem cells and committed progenitors of various blood lineages, and in the differentiation and/or proliferation of various cell types.

Additionally, the polynucleotides and/or polypeptides of the gene of interest and/or agonists and/or antagonists thereof, may also be employed to inhibit the proliferation and differentiation of hematopoietic cells and therefore may be employed to protect bone marrow stem cells from chemotherapeutic agents during chemotherapy. This antiproliferative effect may allow administration of higher doses of chemotherapeutic agents and, therefore, more effective chemotherapeutic treatment.

Moreover, polynucleotides and polypeptides corresponding to the gene of interest may also be useful for the treatment and diagnosis of hematopoietic related disorders such as, for example, anemia, pancytopenia, leukopenia, thrombocytopenia or leukemia since stromal cells are important in the production of cells of hematopoietic lineages. The uses include bone marrow cell ex-vivo culture, bone marrow transplantation, bone marrow reconstitution, radiotherapy or chemotherapy of neoplasia.

Example 44: Human Dermal Fibroblast and Aortic Smooth Muscle Cell Proliferation

The polypeptide of interest is added to cultures of normal human dermal fibroblasts (NHDF) and human aortic smooth muscle cells (AoSMC) and two co-assays are performed with each sample. The first assay examines the effect of the polypeptide of interest on the proliferation of normal human dermal fibroblasts (NHDF) or aortic smooth muscle cells (AoSMC). Aberrant growth of fibroblasts or smooth muscle cells is a part of several pathological processes, including fibrosis, and restenosis. The second assay examines IL6 production by both NHDF and SMC. IL6 production is an indication of functional activation. Activated cells will have increased production of a number of cytokines and other factors, which can result in a proinflammatory or immunomodulatory outcome. Assays are run with and without co-TNFa stimulation, in order to check for costimulatory or inhibitory activity.

Briefly, on day 1, 96-well black plates are set up with 1000 cells/well (NHDF) or 2000 cells/well (AoSMC) in 100 μl culture media. NHDF culture media contains: Clonetics FB basal media, 1mg/ml hFGF, 5mg/ml insulin, 50mg/ml gentamycin, 2%FBS, while AoSMC culture media contains Clonetics SM basal media, 0.5 μg/ml hEGF, 5mg/ml insulin, 1μg/ml hFGF, 50mg/ml gentamycin, 50 μg/ml Amphotericin B, 5%FBS. After incubation at 37°C for at least 4-5 hours, culture media is aspirated and replaced with growth arrest media. Growth arrest media for NHDF contains fibroblast basal media, 50mg/ml gentamycin, 2% FBS, while growth arrest media for AoSMC contains SM basal media, 50mg/ml gentamycin, 50μg/ml Amphotericin B, 0.4% FBS. Incubate at 37°C until day 2.

On day 2, serial dilutions and templates of the polypeptide of interest are designed such that they always include media controls and known-protein controls. For both stimulation and inhibition experiments, proteins are diluted in growth arrest media. For inhibition experiments, TNFa is added to a final concentration of 2ng/ml (NHDF) or 5ng/ml (AoSMC). Add 1/3 vol media containing controls or polypeptides of the present invention and incubate at 37°C/5% CO_2 until day 5.

Transfer 60μl from each well to another labeled 96-well plate. cover with a plate-sealer, and store at 4°C until Day 6 (for IL6 ELISA). To the remaining 100 μl in the cell culture plate, aseptically add Alamar Blue in an amount equal to 10% of the culture volume (10μl). Return plates to incubator for 3 to 4 hours. Then measure fluorescence with excitation at 530nm and emission at 590nm using the CytoFluor. This yields the growth stimulation/inhibition data.

On day 5, the IL6 ELISA is performed by coating a 96 well plate with 50-100 ul/well of Anti-Human IL6 Monoclonal antibody diluted in PBS, pH 7.4, incubate ON at room temperature.

On day 6, empty the plates into the sink and blot on paper towels. Prepare Assay Buffer containing PBS with 4% BSA. Block the plates with 200 μl/well of Pierce Super Block blocking buffer in PBS for 1-2 hr and then wash plates with wash buffer (PBS, 0.05% Tween-20). Blot plates on paper towels. Then add 50 μl/well of diluted Anti-Human IL-6 Monoclonal, Biotin-labeled antibody at 0.50 mg/ml. Make dilutions of IL-6 stock in media (30, 10, 3, 1, 0.3, 0 ng/ml). Add duplicate samples to top row of plate. Cover the plates and incubate for 2 hours at RT on shaker. Plates are washed with wash buffer and blotted on paper towels. Dilute EU-labeled Streptavidin 1:1000 in Assay buffer, and add 100 μl/well. Cover the plate and incubate 1 h at RT. Plates are again washed with wash buffer and blotted on paper towels. Add 100 μl/well of Enhancement Solution and shake for 5 minutes. Read the plate on the Wallac DELFIA Fluorometer. Readings from triplicate samples in each assay are tabulated and averaged.

A positive result in this assay suggests AoSMC cell proliferation and that the polypeptide of the present invention may be involved in dermal fibroblast proliferation and/or smooth muscle cell proliferation. A positive result also suggests many potential uses of polypeptides, polynucleotides, agonists and/or antagonists of the polynucleotide/polypeptide of the present invention which gives a positive result. For example, inflammation and immune responses, wound healing, and angiogenesis, as detailed throughout this specification. Particularly, polypeptides of the present invention and polynucleotides of the present invention may be used in wound healing

and dermal regeneration. as well as the promotion of vasculargenesis. both of the blood vessels and lymphatics. The growth of vessels can be used in the treatment of, for example, cardiovascular diseases. Additionally, antagonists of polypeptides and polynucleotides of the invention may be useful in treating diseases, disorders, and/or conditions which involve angiogenesis by acting as an anti-vascular (e.g., anti-angiogenesis). These diseases, disorders, and/or conditions are known in the art and/or are described herein, such as, for example, malignancies, solid tumors, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; artheroscleric plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uvietis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia; hemophiliac joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis. Moreover, antagonists of polypeptides and polynucleotides of the invention may be useful in treating anti-hyperproliferative diseases and/or anti-inflammatory known in the art and/or described herein.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

Example 45: Cellular Adhesion Molecule (CAM) Expression on Endothelial Cells

The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules

(CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Briefly, endothelial cells (e.g., Human Umbilical Vein Endothelial cells (HUVECs)) are grown in a standard 96 well plate to confluence, growth medium is removed from the cells and replaced with 100 μl of 199 Medium (10% fetal bovine serum (FBS)). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 μl volumes). Plates are then incubated at 37°C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100 μl of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min. Fixative is removed from the wells and wells are washed 1X with PBS(+Ca,Mg) + 0.5% BSA and drained. 10 μl of diluted primary antibody is added to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 μg/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed three times with PBS(+Ca,Mg) + 0.5% BSA. 20 μl of diluted ExtrAvidin-Alkaline Phosphotase (1:5,000 dilution, refered to herein as the working dilution) are added to each well and incubated at 37°C for 30 min. Wells are washed three times with PBS(+Ca,Mg)+0.5% BSA. Dissolve 1 tablet of p-Nitrophenol Phosphate pNPP per 5 ml of glycine buffer (pH 10.4). 100 μl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphotase in glycine buffer: 1:5,000 (10^0) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 μl of each dilution is added to triplicate wells and the resulting AP content in

each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 µl of pNNP reagent is then added to each of the standard wells. The plate is incubated at 37°C for 4h. A volume of 50 µl of 3M NaOH is added to all wells. The plate is read on a plate reader at 405 nm using the background subtraction option on blank wells filled with glycine buffer only. Additionally, the template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

Example 46: Alamar Blue Endothelial Cells Proliferation Assay

This assay may be used to quantitatively determine protein mediated inhibition of bFGF-induced proliferation of Bovine Lymphatic Endothelial Cells (LECs), Bovine Aortic Endothelial Cells (BAECs) or Human Microvascular Uterine Myometrial Cells (UTMECs). This assay incorporates a fluorometric growth indicator based on detection of metabolic activity. A standard Alamar Blue Proliferation Assay is prepared in EGM-2MV with 10 ng /ml of bFGF added as a source of endothelial cell stimulation. This assay may be used with a variety of endothelial cells with slight changes in growth medium and cell concentration. Dilutions of the protein batches to be tested are diluted as appropriate. Serum-free medium (GIBCO SFM) without bFGF is used as a non-stimulated control and Angiostatin or TSP-1 are included as a known inhibitory controls.

Briefly, LEC, BAECs or UTMECs are seeded in growth media at a density of 5000 to 2000 cells/well in a 96 well plate and placed at 37-C overnight. After the overnight incubation of the cells, the growth media is removed and replaced with GIBCO EC-SFM. The cells are treated with the appropriate dilutions of the protein of interest or control protein sample(s) (prepared in SFM) in triplicate wells with additional bFGF to a concentration of 10 ng/ ml. Once the cells have been treated with the samples, the plate(s) is/are placed back in the 37° C incubator for three days. After three days 10 ml of stock alamar blue (Biosource Cat# DAL1100) is added to each well and the plate(s) is/are placed back in the 37°C incubator for four hours. The

plate(s) are then read at 530nm excitation and 590nm emission using the CytoFluor fluorescence reader. Direct output is recorded in relative fluorescence units.

Alamar blue is an oxidation-reduction indicator that both fluoresces and changes color in response to chemical reduction of growth medium resulting from cell growth. As cells grow in culture, innate metabolic activity results in a chemical reduction of the immediate surrounding environment. Reduction related to growth causes the indicator to change from oxidized (non-fluorescent blue) form to reduced (fluorescent red) form. i.e. stimulated proliferation will produce a stronger signal and inhibited proliferation will produce a weaker signal and the total signal is proportional to the total number of cells as well as their metabolic activity. The background level of activity is observed with the starvation medium alone. This is compared to the output observed from the positive control samples (bFGF in growth medium) and protein dilutions.

Example 47: Detection of Inhibition of a Mixed Lymphocyte Reaction

This assay can be used to detect and evaluate inhibition of a Mixed Lymphocyte Reaction (MLR) by gene products (e.g., isolated polypeptides). Inhibition of a MLR may be due to a direct effect on cell proliferation and viability, modulation of costimulatory molecules on interacting cells, modulation of adhesiveness between lymphocytes and accessory cells, or modulation of cytokine production by accessory cells. Multiple cells may be targeted by these polypeptides since the peripheral blood mononuclear fraction used in this assay includes T, B and natural killer lymphocytes, as well as monocytes and dendritic cells.

Polypeptides of interest found to inhibit the MLR may find application in diseases associated with lymphocyte and monocyte activation or proliferation. These include, but are not limited to, diseases such as asthma, arthritis, diabetes, inflammatory skin conditions, psoriasis, eczema, systemic lupus erythematosus, multiple sclerosis, glomerulonephritis, inflammatory bowel disease, crohn's disease, ulcerative colitis, arteriosclerosis, cirrhosis, graft vs. host disease, host vs. graft

disease. hepatitis. leukemia and lymphoma.

Briefly. PBMCs from human donors are purified by density gradient centrifugation using Lymphocyte Separation Medium (LSM®. density 1.0770 g/ml, Organon Teknika Corporation, West Chester, PA). PBMCs from two donors are adjusted to 2 x 10^6 cells/ml in RPMI-1640 (Life Technologies, Grand Island, NY) supplemented with 10% FCS and 2 mM glutamine. PBMCs from a third donor is adjusted to 2 x 10^5 cells/ml. Fifty microliters of PBMCs from each donor is added to wells of a 96-well round bottom microtiter plate. Dilutions of test materials (50 μl) is added in triplicate to microtiter wells. Test samples (of the protein of interest) are added for final dilution of 1:4; rhuIL-2 (R&D Systems, Minneapolis, MN, catalog number 202-IL) is added to a final concentration of 1 μg/ml; anti-CD4 mAb (R&D Systems, clone 34930.11, catalog number MAB379) is added to a final concentration of 10 μg/ml. Cells are cultured for 7-8 days at 37°C in 5% CO_2, and 1 μC of [^{3}H] thymidine is added to wells for the last 16 hrs of culture. Cells are harvested and thymidine incorporation determined using a Packard TopCount. Data is expressed as the mean and standard deviation of triplicate determinations.

Samples of the protein of interest are screened in separate experiments and compared to the negative control treatment, anti-CD4 mAb, which inhibits proliferation of lymphocytes and the positive control treatment, IL-2 (either as recombinant material or supernatant), which enhances proliferation of lymphocytes.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

It will be clear that the invention may be practiced otherwise than as particularly described in the foregoing description and examples. Numerous modifications and variations of the present invention are possible in light of the above teachings and, therefore, are within the scope of the appended claims.

The entire disclosure of each document cited (including patents, patent applications, journal articles, abstracts, laboratory manuals. books, or other disclosures) in the Background of the Invention. Detailed Description. and Examples

is hereby incorporated herein by reference. Further, the hard copy of the sequence listing submitted herewith and the corresponding computer readable form are both incorporated herein by reference in their entireties. Moreover, the hard copy of and the corresponding computer readable form of the Sequence Listing of Serial No. 60/124,270 are also incorporated herein by reference in their entireties.

Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209059

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: 209059

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

ATCC Deposit No.: 209059

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209060

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: 209060

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

ATCC Deposit No.: 209060

DENMARK

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SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209061

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: 209061

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No.: 209061

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209062

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: 209062

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No.: 209062

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209063

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: 209063

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No.: 209063

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209064

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: 209064

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No.: 209064

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209065

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Authorized officer	Authorized officer

ATCC Deposit No.: 209065

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

ATCC Deposit No.: 209065

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209066

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: 209066

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No.: 209066

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91 , line N/A .

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209067

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
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Authorized officer	Authorized officer

ATCC Deposit No.: 209067

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No.: 209067

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209068

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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Authorized officer	Authorized officer

ATCC Deposit No.: 209068

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations). or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No.: 209068

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209069

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
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Authorized officer	Authorized officer

ATCC Deposit No.: 209069

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No.: 209069

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
12 January 1998	209579

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
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Authorized officer	Authorized officer

ATCC Deposit No.: 209579

CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No.: 209579

DENMARK

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SWEDEN

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
12 January 1998	209578

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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For receiving Office use only	For International Bureau use only
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Authorized officer	Authorized officer

ATCC Deposit No.: 209578

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

ATCC Deposit No.: 209578

DENMARK

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SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
16 July 1998	203067

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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Authorized officer	Authorized officer

ATCC Deposit No.: 203067

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

ATCC Deposit No.: 203067

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
16 July 1998	203068

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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ATCC Deposit No.: 203068

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No.: 203068

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
01 February 1999	203609

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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ATCC Deposit No.: 203609

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No.: 203609

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
01 February 1999	203610

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Authorized officer	Authorized officer

ATCC Deposit No.: 203610

CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No.: 203610

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
17 November 1998	203485

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Authorized officer	Authorized officer

ATCC Deposit No.: 203485

CANADA

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NORWAY

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UNITED KINGDOM

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ATCC Deposit No.: 203485

DENMARK

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NETHERLANDS

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
18 June 1999	PTA-252

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: PTA-252

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No.: PTA-252

DENMARK

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SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
18 June 1999	PTA-253

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: PTA-253

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No.: PTA-253

DENMARK

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Applicant's or agent's file reference number	PA102PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 91, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
22 December 1999	PTA-1081

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No.: PTA-1081

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

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ATCC Deposit No.: PTA-1081

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What Is Claimed Is:

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X or a polynucleotide fragment of the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(c) a polynucleotide encoding a polypeptide fragment of a polypeptide encoded by SEQ ID NO:X or a polypeptide fragment encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(d) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y or a polypeptide domain encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(e) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:Y or a polypeptide epitope encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(f) a polynucleotide encoding a polypeptide of SEQ ID NO:Y or the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X, having biological activity;

(g) a polynucleotide which is a variant of SEQ ID NO:X;

(h) a polynucleotide which is an allelic variant of SEQ ID NO:X;

(i) a polynucleotide which encodes a species homologue of the SEQ ID NO:Y;

(j) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(i), wherein said polynucleotide does not hybridize under stringent conditions to a nucleic acid molecule having a nucleotide

sequence of only A residues or of only T residues.

2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a protein.

3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:Y or the polypeptide encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X.

4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:X or the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X.

5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.

11. An isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polypeptide fragment of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;

(b) a polypeptide fragment of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone, having biological activity;

(c) a polypeptide domain of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;

(d) a polypeptide epitope of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;

(e) a full length protein of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;

(f) a variant of SEQ ID NO:Y;

(g) an allelic variant of SEQ ID NO:Y; or

(h) a species homologue of the SEQ ID NO:Y.

12. The isolated polypeptide of claim 11, wherein the full length protein comprises sequential amino acid deletions from either the C-terminus or the N-terminus.

13. An isolated antibody that binds specifically to the isolated polypeptide of claim 11.

14. A recombinant host cell that expresses the isolated polypeptide of claim 11.

15. A method of making an isolated polypeptide comprising:

(a) culturing the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed; and

(b) recovering said polypeptide.

16. The polypeptide produced by claim 15.

17. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11 or the polynucleotide of claim 1.

18. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or absence of a mutation in the polynucleotide of claim 1; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or absence of said mutation.

19. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

20. A method for identifying a binding partner to the polypeptide of claim 11 comprising:

(a) contacting the polypeptide of claim 11 with a binding partner; and

(b) determining whether the binding partner effects an activity of the polypeptide.

21. The gene corresponding to the cDNA sequence of SEQ ID NO:Y.

22. A method of identifying an activity in a biological assay, wherein the method comprises:

(a) expressing SEQ ID NO:X in a cell:

(b) isolating the supernatant;

(c) detecting an activity in a biological assay; and

(d) identifying the protein in the supernatant having the activity.

23. The product produced by the method of claim 20.

SEQUENCE LISTING

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Steve Ruben

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gcaatcaacg gcaagattgt gacagattac acc 393

<210> 6
<211> 539
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (486)
<223> n equals a,t,g, or c

<400> 6
gctcgtgccg ctgaaatgac ttccacggct gggacgggaa ccttccaccc acagctatgc 60
ctctgattgg tgaatggtga aggtgcctgt ctaacttttc tgtaaaaaga accagctgcc 120
tccaggcagc magccctcaa gcatcactta caggaccaga gggacaagac atgactgtga 180
tgaggagctg ctttcgccaa tttaacacca agaagaattg aggctgcttg ggaggaaggc 240
caggaggaac acgagactga gagatgaatt ttcaacagag gctgcaaagc tgtggacttt 300
agccagaccc ttctgccctc ctttgctggc gacacttctt caaatgcaga tggttgtgct 360
cccttgcctg ggttttaccc tgcttctytg gagccaggta tcaggggccc agggccaaga 420
attccacttt gggccctgcc aagtgaaggg ggttgttccc cagaaamtkt gggaagsctt 480
ctgggntgtg aaagacayta tgcaagytca ggwtaacatc asgrgtsccc ggttgttgc 539

<210> 7
<211> 804
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (758)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (759)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (771)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (802)
<223> n equals a,t,g, or c

<400> 7
aattcggcac gagttcaaca ccaagtgtcc ctctggcagt tgtgtgatga atcagtatct 60
gagttcaaaa ttcccaaagg atttcagtac atcttgccgt gcacattttg aaagatacct 120
tttatctcag aaaccaaagt gcctgctgca agcacctatt cctacaaata taatgacaac 180
accagtgtgt gggaaccacc ttctagaagt gggagaagac tgtgattgtg gctctcctaa 240

ggagtgtacc aatctctgct gtgaagccct aacgtgtaaa ctgaagcctg gaactgattg 300
cggaggagat gctccaaacc ataccacaga gtgaatccaa aagtctgctt cactgagatg 360
ctaccttgcc aggacaagaa ccaagaacty taactgtccc aggaatcttg tgaattttca 420
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gtaaacagat gtaattagag acattggctc tttgtttagg cctaatcttt ctttttactt 540
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gagaacaaaa gaaagcagtc ttccatcaaa tcaccttaaa atgcacggct aaactattca 660
gagttaacac tccagaattg ttaaattaca agtactatgc tttaatgctt ctttcatctt 720
actagtaagg cctattaaaa aaaataatac cacttganng gtgaaggctt ngcaatagga 780
agaagataga atccaggttt angg 804

<210> 8
<211> 720
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (714)
<223> n equals a,t,g, or c

<400> 8
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ccctgcagag gtccagggga cccaacagcc ccagcaagat gagatgccta gcccgacctt 180
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caaaagcaca gcagccatga gcacttacac aggcattttt actgaccaag ttctttctgt 360
gctgaaggga gaggagtaac agccagaccc cccatcagtg gacaagggga gagtccccta 420
ctcccctgat cccccaggtt cagactgagc tccccccttcc cagtagctct tgcatcctcc 480
tcccaactct agcctgaatt cttttcaata aaaaatacaa ttcaagttgc ttctcatgga 540
tggcactgct tttctgagga ctcaaggtgc caagatggag gggctgactc agtccagcca 600
acatttaatg agcacctact ttatgtatgg agctctaacc catgggtcca tgggaataaa 660
gcagtgaata gtaacaataa ataattgtaa cagcaaaaaa aaaaaaaaaa aaanaaaaaa 720

<210> 9
<211> 540
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (463)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (524)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (535)
<223> n equals a,t,g, or c

<400> 9
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accagcagat tccacatctc gtgaaggctc actctctgct tcacagatgg cactgtcttg 120
ctgtgttctc acatggcaga aggggcaaac aagccccccct gggcctcttt tataaaggca 180
ctaactctat gcctaaaggc agggccctca tgactctatc acctaccaaa aggctccact 240
tctttatact attggagggg tagaaggaac ttcctttcta gaccttgaag gtttaagaat 300
ttgaatctat aaaacaagct gacaatagac agattaacag gagaaaaagc atatacattt 360
tttaatgtgg gccagatggc agaagcttaa ataacacccc aagctacagg gaagtgaggc 420
ctctgatggg ggaggtagtt gacacaggct gtggggaggg gtnaggggga ggaatctgtg 480
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<210> 10
<211> 561
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (406)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (546)
<223> n equals a,t,g, or c

<400> 10
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gagaccccag gtgtgctctc atccgtactc tgtgacaccc cttagtggac tgttccaacc 120
agttgggccc gggagaagga ctagggaagc ttccttccca tctgcacctc ccagcctgga 180
gaggagcctg tgacttgccc tgttccttgg ctcctcaggc tggggtaagg tgtgggggtg 240
gctccagcct tgaggccagt ctcctgatgc tggattcctt gttttccctg caggcatcaa 300
acagaaaggc cttttgctaa gtagcagcct gatgcactcc gagtcagagc tggacagcga 360
tgatgccatc tttacatggc cagaccgaga gaagggcaaa ctcctngcat ggtcagaatg 420
gctctgtacc caacgggcag accctctgn aaggccagga gcccgcggga rgagatcctg 480
tagccacctg gtctgtctyc tcagggcarg gccaggcaca attgcccggc cagttcttct 540
aacttnccga gttttgcggg g 561

<210> 11
<211> 393
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (346)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (381)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (383)
<223> n equals a,t,g, or c

<400> 11
tcgacccacg cgtccgggtg agtgccatct taaaacttac tggagattgg ttttatattt 60
agatttatat aactggttat gtgaatatat ttaaatactg gggaaattgc ttcactgtct 120
tagaaccaag caagattcac ctgtgttttg tgttcatgtt catttgcctc ttaaaggcaa 180
gggttgaaga taaataaggt agcaatgtct atagttttgg ccttaactat gccaatctaa 240
ttataattcc ctgtatttaa aatggtttct tttacttatt gaaaggcatt ttagtgtggt 300
ktatgtgtaa tattaaagat tattcaacac ctctcaraaa aaaaanraaa aaggggggcc 360
ccccctgggg gtcccaagct nancgtacgc ggg 393

<210> 12
<211> 322
<212> DNA
<213> Homo sapiens

<400> 12
taagaataca aaattagcca agcatgctgg cacatgcctg taatcccagc tactcgggag 60
gctgaggtac gagaatcgct tgaacctggg aggcagagga tgcagtgagc cgggatcacg 120
ccattgcact ccagcctggg ggacaagagt gaatctgtgt ctcaccaaaa aaaaaaagaa 180
aaagaaagat gcttaacaaa ggttaccata agccacaaat tcatraccac ttatccttcc 240
agtttcaagt agaatatatt cataacctca ataaagttct ccctgctccc aaaaaaaaaa 300
aaaaaaaaaa aaaaaaaaaa ag 322

<210> 13
<211> 1907
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1834)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1843)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1888)
<223> n equals a,t,g, or c

<400> 13
gagaaataat aatatagctt tatagaattt tccatcttgt attaaaataa tcacatgtac 60
atcattgtaa ctcagtccat aacataagat tttgtacaac aatttctttt tgtgtgctgg 120
catcattaag gtttagtctg cccagatcac ctattagtac ctaatttata tattctgaat 180
taaaattatc tgttaattta aaaacatttt atctattgtc tttcaaaata gtattaactg 240
agggtttttt tgtgtgtgtt tttctatttt gcttggcttt ttgaacatta ctggactctc 300
gttttagaag gaaaaacctt tcagctctac tctcacaatc ttatagcttt gtttgaacat 360
gccaaaaaac caggattagc tgcccatatt caaactcaca ggtttccaga ccgaatacta 420
ccaagaaaat tcgctttaac aacaaagatt cctgatacaa aaggctgcca caaatgttgc 480
atagtcagaa acccttacac gggacataaa tacctctgtg gagctttaca gtctggaatt 540
gttttacttc agtggtatga gccaatgcag aaattcatgt tgataaagca ctttgatttt 600
cctttgccaa gtcctttgaa tgtttttgaa atgctggtga tacctgaaca ggaataccct 660
atggtctgtg tagctattag caaaggcact gaatcgaatc aggtagttca gtttgagaca 720
atcaatttga actctgcatc ttcatggttt acagaaattg gtgcaggcag ccagcagtta 780
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cagttcatac agaataccyt aaaagggagc ytangtttcc acnacagata agtggtaagg 1860
gtcataccgg agataatgat gatagtgnaa tatcctagaa gggggtg 1907

<210> 14
<211> 1140
<212> DNA
<213> Homo sapiens

<400> 14
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agtgcttgga tgctttgcac aaaaacagaa taattcactg tgaccttaag cccgagaaca 120
ttttgttaaa gcagcagggt agaagcggta ttaaagtaat tgattttggc tccagttgtt 180
acgagcatca gcgtgtctac acgtacatcc agtcgcgttt ttaccgggct ccagaagtga 240

tccttggggc caggtatggc atgcccattg atatgtggag cctgggctgc atttagcag 300
agctcctgac gggttacccc ctcttgcctg gggaagatga aggggaccag ctggcctgta 360
tgattgaact gttgggcatg cctcacagaa actgctggat gcatccaaac gagccaaaaa 420
ttttgtgagc tccaagggtt atccccgtta ctgcactgtc acgactctct cagatggctc 480
tgtggtccta aacggaggcc gttcccggag gggaaactga ggggcccacc ggagagcaga 540
gagtggggka acgcgctgaa ggggtgtgat gatccccttt tccttgactt cttaaaacag 600
tgtttagagt gggatcctgc agtgcgcatg accccaggcc aggctttgcg gcacccctgg 660
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agagcaccgg tgctatcaca tctatatcca agttacctcc accttctagc tcagcttcca 780
aactgaggac taatttggcg cagatgacag atgccaatgg gaatattcag cagaggacag 840
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tgtttttata aaatacatga ggacaatgct ttaartttta aaaaaaaaaa aaaaaaaaaa 1080
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaagg gcggccgctc gcgatctaga 1140

<210> 15
<211> 2008
<212> DNA
<213> Homo sapiens

<400> 15
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gacacttagg gacaggtcac taagcagaat aggtattagt tggtttttta ttatttttaa 180
atttatatag ctctcatgta ttgaaggtgc tactttaaaa actgtgttaa tgtacttgca 240
aatctcctgc tggctcatga aacagcagaa ttccagccaa ggcaaattca gttggatcta 300
gggcttgaaa actgcccaag attaaagagc taagatgaaa tagtttgaat aaactggtaa 360
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gctattatat gctgtggctt tgagaagtta acttttgtgg aatatgaaac caaaggaaga 600
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cattattttt actttttttt tttaattcag aagactagaa cagaacttaa attttacaaa 780
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aatggaaaat ttatatgtat ttttaccaca ataaacaaaa aaccctaaaa aaactttaat 1920
gaaaggtgga aaataattta acttayaatg tgaaaataca atgtgaaatg tacaataaat 1980
catatttatg gcaaaaaaaa aaaaaatt 2008

<210> 16
<211> 371
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (350)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (360)
<223> n equals a,t,g, or c

<400> 16
agagagctag agggactagg agataatgtg tatgtaggtt tatgtgatgg gatatcaccc 60
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tattgtaaat agatgggctg ggctaaacat tgttgccgtt tcatacttct accaactcag 240
cttttacaca ataaagctct actgtctctg aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 300
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaattn gggggggggn 360
cccccccccc c 371

<210> 17
<211> 763
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<400> 17
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taattttaac aattttaaca gcaagtggtg gggggagttc tcagatgagc aactggagct 120
ggaagcactt ctgtggtcaa gcaggcagcc catggggttg catcttcctg ttgggggatc 180
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cattcgggca tgtgtcatta gggatgacat tctctgaagg ctgcccggct tgaatggcca 360
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aaagcatctc ttgcttggca ggtggaatat aggcaatttt ggatttttaa tgcatggcat 540
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ctctggatga tacggtatca aacactgctg ctcctttctg ttttcttttg tgggaaaggg 660
aggaggatag aatggagagg aattagtggg agcctggggg aagttcaaaa taaagaaact 720
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<210> 18
<211> 1926
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (898)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1024)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1083)
<223> n equals a,t,g, or c

<400> 18
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cctgagatcc tgcgaaggct ggacgtgcgg ctgctggagg tctctccagg tgacactgga 120
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actgmccaag atgttggggt gggggggatt gtttttgta aaaatgtcat tatcaggtca 1860
cataaatctg cctttatgtt gcataagtga aaatttagaa aattaaaagc aattatcttt 1920
magaaa 1926

<210> 19
<211> 2301
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (190)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2052)
<223> n equals a,t,g, or c

<400> 19
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cataagaaat tactgcatta agaaaatcct tgctgtgccc tttgaaaagc tgttcagaaa 720
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catttaaatg taatttgttg tgagaataaa tttagctgca taaaaaaaaa aaaaaaaagg 2280
gcggccgctc gcgatctaga a 2301

<210> 20
<211> 538
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (507)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (514)
<223> n equals a,t,g, or c

<400> 20
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ggaaggcaag ggtatttttt acaacatcaa aaactttgtc cgattccagc tgagcacgag 120
catctccgcc ctgagtctca tcactctgtc caccgtgttc aacctgccca gcccccctcaa 180
cgccatgcag atcctatgga tcaacatcat catggatggg ccaccgggca gaggtgaggc 240
agggcggctg ggagccctgt gtctctttac ctacctgcgg ggcttcctcc aggggctgct 300
ggctgtgccc aaggctatag ggatgaacaa atacagccac tttccatcag gagttcccag 360
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tgggccggca gagctgggtg aggatggaac tttctgcttc ctctggctgg atgctctctc 480
tgggcaaacc tgcatgggtt aattctnatg cttnaatttc aagtcaccca gtcactgg 538

<210> 21
<211> 1403
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1370)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (1386)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1393)
<223> n equals a,t,g, or c

<400> 21
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acagaacatt cccatcgttg cagaaggttc tatcagctag cactgggttg gacgacactt 120
gccaagacga gctggctaga ggatrgttct ccggacctgg tcccacgtgg ttcccagctg 180
gctggaggcg tgatcctggg tgtggccctg tggctccgcc atgacccgca gaccaccaac 240
ctcctgtatc tggagctggg agacaagccc gcgcccaaca ccttctatgt aggcatctac 300
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atccaggaat cccagtgcct gctggggacg ttcttcacct gcctggtcat cctgtttgcc 420
tgtgaggtgg ccgccggcat ctggggcttt gtcaacaagg accagatcgc caaggatgtg 480
aagcagttct atgaccaggc cctacagcag gccgtggtgg atgatgacgc caacaacgcc 540
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tcatgcacct gtcctttcta acacgtcgcc ttcaactgta atcacaacat cctactccgt 1320
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gcccgntacc canttggccc aat                                         1403
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<210> 22
<211> 478
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (474)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (475)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (476)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (478)
<223> n equals a,t,g, or c

<400> 22
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tggaagggct tgttaataca aattgctagg ccacaaccct aaagtttctg attcagggta 120
gggcaaggcg aggcttaaac ttcaggccag gggccacttt aagaattgct atatggccag 180
ggccgggcgc ggtggctcac gcctgtaatc ccagcacttt gggaggccga ggtgggcgga 240
tcacaaggtc aggagatcga gaccatcctg gctaacacgg tgaaaccctg tctgtagtaa 300
aaatacaaaa aaattagcca ggcatggtgg tgggtgcctg tagtcccagc tacttgggag 360
gctgaggcag gagaatggtg tgaacccagg aggtggagct tgcagtgagc cgagatcgtg 420
ccactgcact ccagcctggg caacagagcg agacttccgt ctcaaaaaaa aaannncn 478

<210> 23
<211> 1252
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1227)
<223> n equals a,t,g, or c

<400> 23
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ccctcccgcc aagccatatt ctgttggatg agcttcagtg cctaccagac agcctttatc 120
tgccttgggc tcctggtgca gcagatcatc ttcttcctgg gaaccacggc cctggccttc 180
ctggtgctca tgcctgtgct ccatggcagg aacctcctgc tcttccgttc cctggagtcc 240
tcgtggccct tctggctgac tttggccctg gctgtgatcc tgcagaacat ggcagcccat 300
tgggtcttcc tggagactca tgatggacac ccacagctga ccaaccggcg agtgctctat 360
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cgagtgctcc tctctgccct ctacaacgcc atccaccttg gccagatgga cctcagcctg 480
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ttgaagtcag ccagtcgcat ccagccatga cagccttctg ctccctgctc ctgcaagcgc 600
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acgaagggat gcagctgcta cagacaaagg rctccatggc caagggagct aggcccgggg 720
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<210> 24
<211> 1074
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (928)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (934)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1028)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1031)
<223> n equals a,t,g, or c

<400> 24
gctggccttt gctctgcgga ctggcggccc cctggcacag aggtgacatc tcaagggccc 60
aggcagccct cttctagtgg tgccaagagg cggaggctgc gggctgccct tggtccccag 120
cccactcgct cagccctgag gtttccctct gcttccccag ggagcttgaa ggccaagcag 180
tccatggcgg gaatccstgg tagggagagt aatgccccat ctgtgcccac tgtctccctg 240
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gcatgcgaag tcataactct ctccctataa tgatcgtatt ataagtaagc actggccgtc 1020
gtttttanaa ngtcgtgaat ggggaaattt gctaactttg ggaacttttt gaaa 1074

<210> 25
<211> 1186
<212> DNA
<213> Homo sapiens

<400> 25

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gaccccagca ccagccttct ggaacagggc cacattgtcc attacctgtc acaggtcctc 180
atctccagcc ccaaggacca aacagtattc caacacctac tgcttcaggg ttctgtcctc 240
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<210> 26
<211> 888
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (670)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (675)
<223> n equals a,t,g, or c

<400> 26
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cccattttat tcctccctcc cagacctgac cccttcatcg ggctcaaga gacctctctc 120
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caaggggctg accacagtgt tttcaggcat cgggcagccg gccttccagg taggcgggcc 780
cagcaggagc ctgcgacccg gcttccctgg ccctaggcca ccgggcgctc agccccaccg 840

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<210> 27
<211> 789
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (420)
<223> n equals a,t,g, or c

<400> 27
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tacgatgagc tacacaaggt tcattactta tttggtggga atccaggaaa atcttgctct 180
ccaaagatga gattagatga cttctggtca ctgaagttgt gtagaccttc aaaagattat 240
ttactgaggc attgcaagta cctcataaga aaacacakgt ttgaagaaaa ggcccaagtg 300
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tgcaccagag ttctgaaggg atcttaacca tcacaagttt ttaccctctt ccttcatgcc 720
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atactttcc 789

<210> 28
<211> 847
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (799)
<223> n equals a,t,g, or c

<400> 28
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gatgtcaccc atttcatctg ccaggctgct gtgcccaaga gtctccagct gcagctgcag 660
gcccccagtg ggaacacagt tccagctcgg ggtggccttc ctatcaccca gctcttcaga 720

atcctcaatc ctaacaaggc ccccctgcgg ctaaagctgc gctcactacg accactttca 780
ccagtcggtg caggagatnt ttgaggtgaa caactgcctg tggaatcgtg gcagtaatgt 840
ctccaat 847

<210> 29
<211> 666
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<400> 29
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gttaacctct gctttagagg gtagctacta gctttgttgg ggataaaagt gtaatacatg 120
cacttttgaa ctctgaaagt ttgccaatct gaaaaggggt gtttctgaag accactatct 180
tttacgaaca cttaaaaata agtgtttgca gttgtgtatg ggcacgatac tgtattcttt 240
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cactttagaa cagctttgaa actagagttt caaaggtaaa aggatctcat gtttctgaat 360
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tacacatatg tatatataca tagtctatat attctatata agaatatatt ccaataagaa 600
tatattccat acgggaatat attagtcatt gatgtatttt gccggtaaaa ttaaaagata 660
ttttaa 666

<210> 30
<211> 517
<212> DNA
<213> Homo sapiens

<400> 30
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gcaccaagga gccgttggag ggtccgggcg gaggcccgct cgtgtggaag tcgtcgacgc 120
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<210> 31
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<212> DNA
<213> Homo sapiens

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<210> 32
<211> 277
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (109)
<223> n equals a,t,g, or c

<400> 32
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aaggaggcag gtggataaga aggttgaaaa gggggtt 277

<210> 33
<211> 921
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (839)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (846)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (886)
<223> n equals a,t,g, or c

<400> 33
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cgagantttg ttttttacaa tcctaggttg caaggaaaga gctttntaca gttatgctgg 900
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<212> DNA
<213> Homo sapiens

<400> 34
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<210> 35
<211> 2077
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (423)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (730)
<223> n equals a,t,g, or c

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<210> 36
<211> 384
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (370)
<223> n equals a,t,g, or c

<400> 36
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acttcntctn tgccaaaaaa aaaa 384

<210> 37
<211> 468
<212> DNA
<213> Homo sapiens

<400> 37
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<210> 38
<211> 1095
<212> DNA
<213> Homo sapiens

<400> 38
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<210> 39
<211> 1757
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (596)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (647)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (648)
<223> n equals a,t,g, or c

<400> 39
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<210> 40
<211> 1945
<212> DNA
<213> Homo sapiens

<400> 40
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ccaaactggc ttctggaaaa ctggggaagg gttttggtgc ctttgaacgc tcaatcttga 1200
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tccagaagtt acgaagcaaa atccacaaaa aagtagatag gaaagccagc aaaggcagga 1560
aacttcggtt tcatgtcctt agcaagctac tgagtttcat ggcacctatt gaccatacta 1620
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ccgacgaagg ccacggggat tgacatcgcc cacctccgac acccagtggg cgccttggct 1740
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aagcccctgg aaagatgctg cgttccgaac ctgtgcctaa tacacgcaag ggcgctgtcc 1860
cgcccaaccc cgcctttaaa cgccacaaat aaagagcatt gttaccgcca agtacgacgc 1920
ggccgcgaat taccggaccg gtaac 1945

<210> 41

<211> 588
<212> DNA
<213> Homo sapiens

<400> 41
aggcgtatac caccatgact gaaaacaaaa gacttttttt tgagactccc tctcaaaaac 60
aaaacaaaac aaaaaaatta gacaaatgct acattaatgt ttgggtggtc agattctact 120
ttgaatctga agtttgcaga tatgcctata gatttttgga gtttaccact ttcttattct 180
gtatcattaa tgtaatattt taaattacta tatatgttac catttttctg gatttagtaa 240
gaaatttgca gttttggttt gatgtaacaa gggttttaat gtaatttatg ttagattttg 300
catttttttc attactgtta tattttaacc tgactgactg atctaattgt attagtattg 360
tgaataatca tgtgaaatgt tttgagacag agtactatat ttgtgaatat aattttatgg 420
tttttttcac ttagaacctt tctgtgtgga aaactaagaa aattgctttc tgctgtataa 480
tctggcattc attgtagatt aaagcttatt tttctgtgaa taaaacgtat tcaataaaat 540
actattcttt aaaattawaw mawaaaaaaa aaaaaaaaaa aaaaaaa 588

<210> 42
<211> 1568
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (112)
<223> n equals a,t,g, or c

<400> 42
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gagtgaaatt gaacctcgtc ctccctactc attttgatga ctgaggctgg tttataagaa 180
aaggaagttt ggagaagaaa accgagatta gaaaatatca tgttttggtt ggagataaga 240
accagggatg gcaagtacca gtgtgtacaa atgtatttca cggagtttga aggaacgcat 300
aatcaagagg gaaaacaatt tgtccttcat tggacgtatt atttggattt gggtgagcaa 360
caaaatggaa tgtggtctgt taggagcatt ctgtttgttc ttttgtccct gatgtgatga 420
atcattgcca catgctagat ggactcttca tatccaggtt ttgtccctca gggctgagca 480
ctgtattaaa gagtttttgt tgagtcattt aaccttagtg tccacatcca gatcagctgt 540
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attacagagg agcaaaggtt atcttcagcc ctttcagttc tatgctcaca tattcaaata 660
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aatataaata aattacttgt tttgtaaact tttgtaaaga atattttggt agaaatactt 900
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agtagttatc aaatttaaga gataaagcaa tcagaatgtt tggattttct tctatcttaa 1500
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gggaaaaa 1568

<210> 43
<211> 1060
<212> DNA
<213> Homo sapiens

<400> 43
gcttgtcatg agaaggtggt aaatatccaa aaagaccccg gtgaatctct cggcatgacc 60
gtcgcagggg gagcatcaca tagaraatgg gatttgccta tctatgtcat cagtgttgag 120
cccggaggag tcataagcag agatggaaga ataaaaacag gtgacatttt gttgaatgtg 180
gatggggtcg aactgacaga ggtcagccgg agtgaggcag tggcattatt gaaaagaaca 240
tcatcctcga tagtactcaa agctttggaa gtcaaagagt atgagcccca ggaagmctgc 300
agcagcccag cagccctgga ctccaaccac aacatggccc cacccagtga ctggtcccca 360
tcctgggtca tgtggctgga attaccacgg tgcttgtata actgtaaaga tattgtatta 420
cgaagaaaca cagctggaag tctgggcttc tgcattgtag gaggttatga agaatacaat 480
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catgcttgct tggcaagact gctgaaagaa cttaaaggaa gaattactct aactattgtt 660
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aaataggcta agaagttgaa acactatatt tatcttgtca gtttttatat ttaaagaaag 780
aatacattgt aaaaatgtca ggaaaagtat gatcatctaa tgaaagccag ttacacctca 840
gaaaatatga ttccaaaaaa attaaaacta ctagtttttt ttcagtgtgg aggatttctc 900
attactctac aacattgttt atattttttc tattcaataa aaagccctaa aacaacaaaa 960
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa gggcggccgc tctagaggat 1020
ccaagcttac gtacgcgtgc atgcgacgtc atagctcttc 1060

<210> 44
<211> 1344
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (144)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (163)
<223> n equals a,t,g, or c

<400> 44
cccacgcgtc cggggccacc agggcctcct ggccccctg ggcccccagc ccctgttggg 60

ccacccccatg cccggatctc ccagcatgga gacccattgc tgtccaacac cttcactgag 120
accaacaacc actggcccca gggnacccac tgggcctcca ggncytccag ggcccatggg 180
tccccctggg cctcctggcc ccacaggtgt ccctgggagt cctggtcaca taggaccccc 240
aggccccact ggacccaaag gaatctctgg ccacccagga gagaagggcg agagaggact 300
gcgtggggag cctggccccc aaggctctgc tggggcagcg gggggaactg gccctaaggg 360
agaccctggt gagaagagcc actgggctcc tagcttacag agcttcctgc agcagcaggc 420
tcagctggag ctcctggcca gamgggtcam cctcctggaa gccatcatct ggccagaacc 480
agagctgggg tctggggcgg gccctgccgg cacaggcacc cccagcctcc ttcggggcaa 540
gaggggcgga catgcaacca actaccggat cgtggccccc aggagccggg acgagagagg 600
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ggccagctgc ctccagggac cgcccgtcca tatttattaa tgtcctcagg gtcccttctg 720
ccatctaggc cttaggggta agcaggtctc agtcctggca ccatgcacat gtctgaggct 780
gagcaagggc tgagaggaga ggcttgggcc tcagtttccc tctgtgaagt gggggggaggc 840
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agatgccagg aggtagatgt gtgctggcca ataaaggccc ctacctgatt ccccgcaaaa 1260
aaaaaaaaaa aaaaaaaaaa aaaaaaaagg gcggccgctc tagaggatcc aagcttacgt 1320
acgcgtgcaa cgcgggtcat agct 1344

<210> 45
<211> 892
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (890)
<223> n equals a,t,g, or c

<400> 45
ttgagaagtt ggatgaatat atatatagac acttctttgg tcacactttt tcccctccat 60
atggacccag tcgacctgat aaaaagcaac gtatggtaaa tattgaaaac tccaggcatc 120
gaaaacaaga gcagaagcac cttcagccac agccttataa aagggaaggt aaatggcata 180
aatatggtcg cactaatgga agacaaatgg caaatcttga aatagaattg gggcaattac 240
cttttgatcc tcaatactga ttcacaattg agttaaatta gacaactgta agagaaaaat 300
ttatgctttg tataatgttt ggtattgaaa ctaatgaaat taccaagatg acaatgtctt 360
ttcttttgtt tctaagtatc agtttgataa ctttatatta ttcctcagaa gcattagtta 420
aaagtctact aacctgcatt ttcctgtagt ttagcttcgt tgaatttttt ttgacactgg 480
aaatgttcaa ctgtagtttt attaaggaag ccaggcatgc aacagatttt gtgcatgaaa 540
tgagacttcc tttcagtgta agagcttaaa gcaagctcag tcatacatga caaagtgtaa 600
ttaacactga tgtttgtgtt aaatttgcag cagagcttga gaaaagtaca ttgttctgga 660
atttcatcat taacatttta taatcttaca ctcacttctt gtctttttgt gggttcaaga 720
gccctctgac ttgtgaagaa tttgctgccc tcttaagagc ttgctgactt gttttcttgt 780
gaaatttttt gcacatctga atatcgtgga agaaacaata aaactacacc atgaggaaaa 840
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaccccgg ggggggcccn ga 892

<210> 46

<222> (476)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (478)
<223> n equals a,t,g, or c

<400> 22
gagcagaaag tagatgctta atggcagtgt tctctgaccc agacatgaat cagaatcacc 60
tggaagggct tgttaataca aattgctagg ccacaaccct aaagtttctg attcagggta 120
gggcaaggcg aggcttaaac ttcaggccag gggccacttt aagaattgct atatggccag 180
ggccgggcgc ggtggctcac gcctgtaatc ccagcacttt gggaggccga ggtgggcgga 240
tcacaaggtc aggagatcga gaccatcctg gctaacacgg tgaaaccctg tctgtagtaa 300
aaatacaaaa aaattagcca ggcatggtgg tgggtgcctg tagtcccagc tacttgggag 360
gctgaggcag gagaatggtg tgaacccagg aggtggagct tgcagtgagc cgagatcgtg 420
ccactgcact ccagcctggg caacagagcg agacttccgt ctcaaaaaaa aaannncn 478

<210> 23
<211> 1252
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1227)
<223> n equals a,t,g, or c

<400> 23
tttcgagctc tgcaccgagg agctgccctg gacttgagtc ccttgcatcg gagtccccat 60
ccctcccgcc aagccatatt ctgttggatg agcttcagtg cctaccagac agcctttatc 120
tgccttgggc tcctggtgca gcagatcatc ttcttcctgg gaaccacggc cctggccttc 180
ctggtgctca tgcctgtgct ccatggcagg aacctcctgc tcttccgttc cctggagtcc 240
tcgtggccct tctggctgac tttggccctg gctgtgatcc tgcagaacat ggcagcccat 300
tgggtcttcc tggagactca tgatggacac cccacagctga ccaaccggcg agtgctctat 360
gcagccacct ttcttctctt ccccctcaat gtgctggtgg gtgccatggt ggccacctgg 420
cgagtgctcc tctctgccct ctacaacgcc atccaccttg gccagatgga cctcagcctg 480
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ttgaagtcag ccagtcgcat ccagccatga cagccttctg ctccctgctc ctgcaagcgc 600
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acgaagggat gcagctgcta cagacaaagg rctccatggc caagggagct aggcccgggg 720
ccagccgcgg cagggctcgc tggggtctgg cctacacgct gctgcacaac ccaaccctgc 780
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ccggctctcc tcccagcatc acaccagcca tgcagccagc aggtcctccg gatcacygtg 960
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tatgggagag ccagcagggg ttctggagaa aaaaactggt gggttagggc cttggtccag 1080
gagccagttg agccagggca gccacatcca ggcgtctccc taccctggct ctgccatcag 1140
ccttgaaagg gcctcgaata aaccttctct tggaaccact ccaagcccag ctccactcag 1200
ccttggcctt cacgcttgtg gaaacancca aggcattcct ccacccctca ag 1252

<210> 24
<211> 1074
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (928)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (934)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1028)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1031)
<223> n equals a,t,g, or c

<400> 24
gctggccttt gctctgcgga ctggcggccc cctggcacag aggtgacatc tcaagggccc 60
aggcagccct cttctagtgg tgccaagagg cggaggctgc gggctgccct tggtccccag 120
cccactcgct cagccctgag gtttccctct gcttccccag ggagcttgaa ggccaagcag 180
tccatggcgg gaatccstgg tagggagagt aatgccccat ctgtgcccac tgtctccctg 240
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caaggcagcc caggggggctg tgtctgttca agtcaggctt ccccggcccc tcgcgcagca 360
gcgcctccac gggcagcccg gggccccacc ccacgcactg aagaggccgc ctgggctgcc 420
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agaaacttcc gacgcgggga gagcatytac tgggggccca cagcggacag ccaggacaca 540
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cggcctggga cctgccactg tggcgtgcgg ctcctccccg cgccgcgagg ccgcgacctc 720
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ctgcgggggc tttcctcctt gttggttgct gagtgggcgg ccaaggggag aaaaggagcc 840
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aaaaaaaaaa aaaaaggcgg ccgtttanag gatncctcga aggggcccaa gttaacgcgt 960
gcatgcgaag tcataactct ctccctataa tgatcgtatt ataagtaagc actggccgtc 1020
gtttttanaa ngtcgtgaat ggggaaattt gctaactttg ggaacttttt gaaa 1074

<210> 25
<211> 1186
<212> DNA
<213> Homo sapiens

<400> 25

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gaccccagca ccagccttct ggaacagggc cacattgtcc attacctgtc acaggtcctc 180
atctccagcc ccaaggacca aacagtattc caacacctac tgcttcaggg ttctgtcctc 240
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ggtcagggtg gcattaaaat ggactccaaa aacatttttt taaatgttct gtaagataaa 420
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<210> 26
<211> 888
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (670)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (675)
<223> n equals a,t,g, or c

<400> 26
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caaggggctg accacagtgt tttcaggcat cgggcagccg gccttccagg taggcgggcc 780
cagcaggagc ctgcgacccg gcttccctgg ccctaggcca ccgggcgctc agccccaccg 840

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<210> 27
<211> 789
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (420)
<223> n equals a,t,g, or c

<400> 27
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tacgatgagc tacacaaggt tcattactta tttggtggga atccaggaaa atcttgctct 180
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gacccagaag agacaaaaga gtttcagctc ctggcatcag ctctattcaa atctggttcn 420
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agacctcatc acactgtaac tgaagagtca ctggacacag aaatggaaaa caggagtcga 600
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tgcaccagag ttctgaaggg atcttaacca tcacaagttt ttaccctctt ccttcatgcc 720
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<210> 28
<211> 847
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (799)
<223> n equals a,t,g, or c

<400> 28
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ctccaat 847

<210> 29
<211> 666
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<400> 29
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tacacatatg tatatataca tagtctatat attctatata agaatatatt ccaataagaa 600
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ttttaa 666

<210> 30
<211> 517
<212> DNA
<213> Homo sapiens

<400> 30
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cagtgaagat atgataccca cagtgggctt caacatgagg aaggtaacta aaggtaacgt 360
cacaataaag atctgggaca taggaggaca accccgattt cgaagcatgt gggagcggta 420
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<210> 31
<211> 2675
<212> DNA
<213> Homo sapiens

<400> 31
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<210> 32
<211> 277
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (109)
<223> n equals a,t,g, or c

<400> 32
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gggagtcagg gctgaggggc tgcgccacgc cacggccccg ctggagctgg ggaccacaga 180
ctggaccggc tctcttcatg cccagccccc ggagacgggg acccccttccc tgaagggacc 240
aaggaggcag gtggataaga aggttgaaaa gggggtt 277

<210> 33
<211> 921
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (839)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (846)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (886)
<223> n equals a,t,g, or c

<400> 33
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ttcatccacc tctgtggacg atgcattgcc tttaccactt cctgtcccac aacctaagca 180
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tgtacctccc catcacaata aattggagca gcaccaagtg tatggtgcca ggtcagagcc 360
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cgagantttg ttttttacaa tcctaggttg caaggaaaga gctttntaca gttatgctgg 900
gtttgggtcc aggtccccgg g 921

<210> 34
<211> 1467
<212> DNA
<213> Homo sapiens

<400> 34
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tgctctgttt agtttgatat taaagcaaaa ttaagaggtc ttagtttttc ctatagaact 180
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<210> 35
<211> 2077
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (423)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (730)
<223> n equals a,t,g, or c

<400> 35
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<210> 36
<211> 384
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (370)
<223> n equals a,t,g, or c

<400> 36
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<210> 37
<211> 468
<212> DNA
<213> Homo sapiens

<400> 37
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<210> 38
<211> 1095
<212> DNA
<213> Homo sapiens

<400> 38
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<210> 39
<211> 1757
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (596)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (647)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (648)
<223> n equals a,t,g, or c

<400> 39
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<210> 40
<211> 1945
<212> DNA
<213> Homo sapiens

<400> 40
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ccagggtgat tgacaggttt gatgaagggg aagatgggga aggtgatttc ctagtagtgg 180
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gggagagcaa gaagagcaga agccactctg caaaaacacc gggcttcagt gtccagagta 480
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aagcccctgg aaagatgctg cgttccgaac ctgtgcctaa tacacgcaag ggcgctgtcc 1860
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ggccgcgaat taccggaccg gtaac 1945

<210> 41

<211> 588
<212> DNA
<213> Homo sapiens

<400> 41
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gtatcattaa tgtaatattt taaattacta tatatgttac cattttctg gatttagtaa 240
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actattcttt aaaattawaw mawaaaaaaa aaaaaaaaaa aaaaaaaa 588

<210> 42
<211> 1568
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (112)
<223> n equals a,t,g, or c

<400> 42
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aaggaagttt ggagaagaaa accgagatta gaaaatatca tgttttggtt ggagataaga 240
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agtagttatc aaatttaaga gataaagcaa tcagaatgtt tggattttct tctatcttaa 1500
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gggaaaaa 1568

<210> 43
<211> 1060
<212> DNA
<213> Homo sapiens

<400> 43
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cccggaggag tcataagcag agatggaaga ataaaaacag gtgacatttt gttgaatgtg 180
gatggggtcg aactgacaga ggtcagccgg agtgaggcag tggcattatt gaaaagaaca 240
tcatcctcga tagtactcaa agctttggaa gtcaaagagt atgagcccca ggaagmctgc 300
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tcctgggtca tgtggctgga attaccacgg tgcttgtata actgtaaaga tattgtatta 420
cgaagaaaca cagctggaag tctgggcttc tgcattgtag gaggttatga agaatacaat 480
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gaaaatatga ttccaaaaaa attaaaacta ctagtttttt ttcagtgtgg aggatttctc 900
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ccaagcttac gtacgcgtgc atgcgacgtc atagctcttc 1060

<210> 44
<211> 1344
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (144)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (163)
<223> n equals a,t,g, or c

<400> 44
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ccacccccatg cccggatctc ccagcatgga gacccattgc tgtccaacac cttcactgag 120
accaacaacc actggcccca gggnacccac tgggcctcca ggncytccag ggcccatggg 180
tccccctggg cctcctggcc ccacaggtgt ccctgggagt cctggtcaca taggaccccc 240
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aaaaaaaaaa aaaaaaaaaa aaaaaaaagg gcggccgctc tagaggatcc aagcttacgt 1320
acgcgtgcaa cgcgggtcat agct 1344

<210> 45
<211> 892
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (890)
<223> n equals a,t,g, or c

<400> 45
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atggacccag tcgacctgat aaaaagcaac gtatggtaaa tattgaaaac tccaggcatc 120
gaaaacaaga gcagaagcac cttcagccac agccttataa aagggaaggt aaatggcata 180
aatatggtcg cactaatgga agacaaatgg caaatcttga aatagaattg gggcaattac 240
cttttgatcc tcaatactga ttcacaattg agttaaatta gacaactgta agagaaaaat 300
ttatgctttg tataatgttt ggtattgaaa ctaatgaaat taccaagatg acaatgtctt 360
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aaagtctact aacctgcatt ttcctgtagt ttagcttcgt tgaatttttt ttgacactgg 480
aaatgttcaa ctgtagtttt attaaggaag ccaggcatgc aacagatttt gtgcatgaaa 540
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ttaacactga tgtttgtgtt aaatttgcag cagagcttga gaaaagtaca ttgttctgga 660
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gccctctgac ttgtgaagaa tttgctgccc tcttaagagc ttgctgactt gttttcttgt 780
gaaatttttt gcacatctga atatcgtgga agaaacaata aaactacacc atgaggaaaa 840
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaccccgg ggggggcccn ga 892

<210> 46

<211> 496
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (496)
<223> n equals a,t,g, or c

<400> 46
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gtcctgcccg taagttcccg ttttgtgtgt ggttagagca gccagcgggt acagaatgga 120
ttttggaaga gggagtcacc actggacctc caaggaagcc acgtgcagac atctacaacc 180
ttcgatctcc tgacgagttt attgttggcc aaaaccaggc tttgattgaa ccaggatgaa 240
tgcgggtgtt ggaagtagaa tatatatata catataaaat tgaaactggc gatggaatat 300
gagaggagcc ctctggaaag aaaaggacag accctgtgct ttcatgaaag tgaagatctg 360
gctgaaccag ttccacaagg ttactgtata catagcctga gtttaaaagg ctgtgcccac 420
ttcaagaatg tcattgktag actttgaaat ttctaactgc ctacctgcat aaagaaaata 480
aaatctttta aatcan 496

<210> 47
<211> 1229
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (764)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1165)
<223> n equals a,t,g, or c

<400> 47
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ctgaaagttt tggatttgtt tttagtttgt ggagcagtct tagctgggga caggtaattg 240
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gtgtcattag ccctttgccc gtttacctta gggctctttg aaggagaaat ggatgggaga 480
aaacctgtca cttggcgaaa gtaaaaggga taattaactg gctcagagct tatgtgcaga 540
gttccaagcc ccaaagttaa tctagaacca ctcgataaca ccaataaaaa tatttatttc 600
acatctgtta tatatctgga aaatgktcta agcatcttac acatatttct cattaaatcc 660
acaggtgacc attgtgaggt agawattttg ktctaawttt ccagatgagg aagctgagac 720
cctaaaaggt taggtgacag gttatacaac ttggagtgtg ggangaggag agaggaacct 780
gaacagggca agttggggat ctgacttttg tttgggtaga tgtaagcaca ttgtattttt 840
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B4 (cont'd)

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tgtttacaat aatctagatg aatttgctgt ctttggacat ctgtcttttg actggacccc 960
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ttttctgtcc taaaagtaga aatagcccct tctaggtaag gatggagcat ttgatcatac 1080
tggtttcatt atattcctct aacaggttgg aaccgattgt ttttgagtac ttgtttcaaa 1140
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aggttaattt ttttttaaaa gaatggtta                                   1229
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<210> 48
<211> 1411
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1410)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1411)
<223> n equals a,t,g, or c

<400> 48

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agaggagcag ggaataccac ggcccctgca ccccccaccc ccaccccccgg tccagccacc 180
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tgcgaagtct aaagaaaaga agagtgagaa gaaagagaaa gcccaggagg aaccacctgc 420
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<210> 49
<211> 1685
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1606)
<223> n equals a,t,g, or c

<400> 49
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aaacctgagt gacttgacct gtgtggttcc ttaatagtat ctatatatct agacaaaaat 1560
agattgtgaa tgtaaatggt gaatgaaaag gatggaaata atgttntcat atgttaatcc 1620
atgagcttga atccagggag gaatacctcg gtgctttaac caccttagtt ataacacatt 1680
tctta 1685

<210> 50
<211> 660
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (515)
<223> n equals a,t,g, or c

<400> 50
cggcacgcgt gggcctactt tcacgcttcc tcccctcccc ctcctccctt atcccttcgc 60
tttcgctctt ttccgtcgag gccgacccct gagttgtgag tctggggtct ggttggtgaa 120
aaagagccct tgaagctgga agacgggaga ggacaaaagc atgtcttccc ttcctgggtg 180
cattggtttg gatgcagcaa cagctacagt ggagtctgaa gagattgcag agctgcaaca 240
ggcagtggtt gaggaactgg gtatctctat ggaggaactt cggcatttca tcgatgagga 300
actggagaag atggattgtg tacagcaacg caagaagcag ctagcagagt tagagacatg 360
ggtaatacag aaagaatctg aggtggctca cgttgaccaa ctctttgatg atgcatccag 420
ggcagtgact aattgtgagt ctttggtgaa ggacttctac tccaagctgg gactacaata 480
ccgggacagt agctctgagg acgaatcttc ccggnctaca gaaataattg rgattcctga 540
tgaagatgat gatgtcctca gtattgattc aggtgatgct gggagcagaa ctccaaaaga 600
ccagaagctc cgtgaagcta tggctgcctt aagaaagtca gctcaagatg ttcagaagtt 660

<210> 51
<211> 1572
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1555)
<223> n equals a,t,g, or c

<400> 51
tnagtgaaag aatgtgccat attacatatt gcaacctaat ttgttaaaac taactccagc 60
actaaagctg aaatgccaca aacactaaaa gtataaatat gtctgatttt tgaaacacat 120
aagctttgct ctttaggcag gaatgatctt ttcaaatcat tagcacaata tttaaatatc 180
taaaaattta agagatccat actttctgta gctttacaat taatttaagt actaaaaaga 240
caaggatttc ttttaagaaa tttatagcat ttactgtgtt atttaaatgc taagccaaag 300
tatctgcact taggtatacc tctttatgcc aataatgatt ttaatgaagg ctcttttcag 360
atgtaacctt atgaaggaaa tatctgcttt gtgtatatgc cagttagaat actggtttct 420
aaagtctgtc aaattgtatt tcagtggcac aaaaaccagt tttgaggtct tagacttata 480
attctttgaa taaaactgat aacttatttg tataattgga gtggagacct acctccataa 540
ttagataaac tctttttgga ttataatcag aattttgcct tttttcttct caaattatta 600
catatgtatg tattatatat ccacatatat agtttccct gattaaatgg atattaaaat 660
aattgcgggt gcttcaggac tttttgcttc tatatttaag tatattgttt ttatagcaag 720
aacatattct gaatgtttta taaatcttta ataatttata tgtaggtaat atttttgtat 780
cacaatgcat tattttttc ctcctttcct tccaaactat accactgtat ttaccacttc 840
taagagtgac tgacgacggg ccagatgacc cttgaagtag tcattatgta gcaataaatg 900

aagcctgaaa caggtttttt tacttccact ttaatcctta gaaatttctt ggcaacttcg 960
catattttca ttgacaccgg tgtataagta taaatttaaa tgaactaatt acttttgcat 1020
attttaaatt ctttatatgg tagttatttt ttataacagg atattaacat aagttaaatc 1080
ctatgtattt gaaattgtta cagagctttc ctctttactt caaacagcaa aaaagtgggg 1140
ggcatattgt agtcctgtca tttaagttat gtwaaaaatt taatcattat tttgatgctt 1200
taaacattct catgtgtaat atatgttttt gtatcaaaaa cactcatata tttcaagaaa 1260
aagaaattat gttaaatagc cctgttttaa gaaaaatatt tatgaagcat ctcaacttga 1320
agatcaagtc aaagttataa ctcaggatct gargtctcaa gctaggagag actgagaatt 1380
ttaatcagtt tgggcatata rtttggactg aatcacatct gtagtactta gccaaagaca 1440
atttggarga raatatcagc cttctggaar tagctacttc ctgaacaatg taaagtgtcg 1500
caratattca ataaaatggc aacctgttaa aaaaaaaaaa aaaaaaaaaa acccnaaggg 1560
gggggggccc cg 1572

<210> 52
<211> 635
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (632)
<223> n equals a,t,g, or c

<400> 52
gctgctccag ctgttcgaag gtgatccaga cgcaagatgg ctgtcctctc taaggaatat 60
ggttttgtgc ttctaactgg tgctgccagc tttataatgg tggcccacct agccatcaat 120
gtttccaagg cccgcaagaa gtacaaagtg gagtatccta tcatgtacag cacggaccct 180
gaaaatgggc acatcttcaa ctgcattcag cgagcccacc agaacacgtt ggaagtgtat 240
cctccccttct tattttttct agctgttgga ggtgtttacc acccgcgtat agcttctggc 300
ctgggcttgg cctggattgt tggacgagtt ctttatgctt atggctatta cacgggagaa 360
cccagcaagc gtagtcgagg agccctgggg tccatcgccc tcctgggctt ggtgggcaca 420
actgtgtgct ctgctttcca gcatcttggt tgggttaaaa gtggcttggg cagtggaccc 480
aaatgctgcc attaaagaat tataggggtt taaaaactct cattcatttt aaatgactta 540
cctttatttc cakttacatt ttttttctaa atataataaa aacttacctg gcatcagcct 600
catacctaaa aaaaaaaaaa aaaaaaaaac tnggg 635

<210> 53
<211> 1367
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (106)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (958)
<223> n equals a,t,g, or c

<400> 53
ggccacgttg ttatctcttt gatcaagttg ttttacgtgt cacagtagag tctgaccagt 60
taccataacc aaacattttg tgcgtgtgct attgttgctg cgatantctc ctttgggtgg 120
aacacagtga agatcgacat gagtgcagcc cggagagatc ctcttccaat tgttccattt 180
ggattagctg catttgctac cactttgttt gccttgggat tagctttagg aacaaccata 240
gctgttggga tgttgttttt tatccagatg aaaataattc tcagaaacaa aacttctatt 300
gagtcatgga ttgaagagaa ggctaaagat cgaattcagt attatcaact agatgaagtc 360
tttgtttttc catatgatat gggaagtaga tggaggaact ttaaacaggt atttacgtgg 420
tcaggggtcc ctgaaggaga tggacttgag tggccagtaa gagaaggctg tcaccaatac 480
agcttaacaa tagaacagtt gaaacaaaaa gcagataaga gagtcagaag tgttcgctat 540
aaagtaatag aagattatag tggtgcctgc tgccctctga ataaaggaat caaaaccttc 600
ttcacaagtc cctgcaccga agagcctcga atacagctgc aaaaagggga attcatttta 660
gccacaagag gtttacgata ctggttatat ggagacaaaa ttcttgatga ttcctttata 720
gaaggtgttt caagaataag gggttggttc cctagaaaat gtgtggaaaa gtgtccctgt 780
gatgctgaaa cagatcaagc cccagagggg gagaagaaaa atagatagct gctgttaaaa 840
caaaattatc ctttaagtct gcttaattac ttgaaaattg tacatattac taaagaatta 900
tgcaatgagc ctactctggt taagatgttc ttttcctcaa aggtgcccta gtgccatnga 960
tttaaatatt tttattacca ttttgaaatg gagaagccat tctgcatatg cctttgaatt 1020
cctgcccctc tttaccacct cttcctcccc ctcaaaggaa aaacatttca tccaagtaag 1080
ttaacggcat tttctgtagg attttcctta tgcactgcac actctggacc tcacctgcag 1140
atacagttcc cccttgcca ggagcatctg catgtggtac ttctcttttc cctcagttga 1200
tatttcttat atgatattct agatactata gaactcaatt tgtcagattc agtataacct 1260
cagattttgt tacctgtctt ttaaaaatgc agattttgtc aaatcaaata aagatcaatg 1320
gatgttgggt ataawmaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaa 1367

<210> 54
<211> 378
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (363)
<223> n equals a,t,g, or c

<400> 54
ggcagtggta gggngtgaga accctgggnc ctgctgaaaa gcctcctctg taggaggtca 60
cccagcagga caragaagca ggaggaggac agggccacar aggaagccaa gaacggtgaa 120
aaggccaggc ggwgttcara ggaggtggac ggccagcacc cggcccaaga ggaggtcccg 180
gaatcgcccc agacctctgg cccagagcag aaaataggtg tgggagcccc agggaggaaa 240
agccarytgg agaggaagca gagwtggaaa aggctacaga ggtgaagggg gagagggtgc 300

aaaatgaaga ggtgggacct gaacatgaca gccaagaaac aaagaagctt gaggagggag 360
ctncagtgaa ggcgaccc 378

<210> 55
<211> 1058
<212> DNA
<213> Homo sapiens

<400> 55
tcgggtatga ggctgggact aagccaaggg attcaggtgt ggtgccggtg ggaactgagg 60
aagcgcccaa gctttttgt tctgaactcc cactgcgttg tggattcctg aggatgggat 120
gactgtatct tgattacccg gagttttcaa gatggcagca tctatgcatg gtcmgcccag 180
tccttctcta gaagatgcaa aactcagaag accaatggtc atagaaatca tagaaaaaaa 240
ttttgactat cttagaaaag aaatgacaca aaatatatat caaatggcga catttggaac 300
aacagctggt ttctctggaa tattctcaaa cttcctgttc agacgctgct tcaaggttaa 360
acatgatgct ttgaagacat atgcatcatt ggctacactt ccatttttgt ctactgttgt 420
tactgacaag ctttttgtaa ttgatgcttt gtattcagat aatataagca aggaaaactg 480
tgttttcaga agctcactga ttggcatagt ttgtggtgtt ttctatccca gttctttggc 540
ttttactaaa aatggacgcc tggcaaccaa gtatcatacc gttccactgc caccaaaagg 600
aagggtttta atccattgga tgacgctttg tcaaacacaa atgaaattaa tggcgattcc 660
tctagtcttt cagattatgt ttggaatatt aaatggtcta taccattatg cagtatttga 720
agagacactt gagaaaacta tacatgaaga gtaaccaaaa aaatgaatgg ttgctaactt 780
agcaaaatga agtttctata aagaggactc aggcattgct gaaagagtta aaagtaactg 840
tgaacaaata atttgttctg tgccttttgc ctggtatata gcaaatactc aaaaagtatt 900
caataattca atcaataaat ataagtttca tcttacacgt aagatacagg tcttatctcc 960
tgatggtgtg tccattttgc ctggtatata acagataata aatatccagt gtcaataaat 1020
gtaacaataa aagtttcatc tttcctcttt gtatgtgg 1058

<210> 56
<211> 682
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (667)
<223> n equals a,t,g, or c

<400> 56
gggnccggaa catattccct tactcaaaag attgcatgac tgaatttgct taaggaaaaa 60
aaaaattgta tcaagtccat taatacaatt atacattaat tatattacat taatacaata 120
tatggtttgt gaattcagag acattaccag tttgcctcct tctctcaata gaacttgtat 180
tttcattttc ttggttaagc agttgtctcc taatattatc ccatatgcta cctagtttgc 240
tggtcccaag cagtttactg tacttcacta gatttggtac ctgctctccc ctggacttct 300
ttttcaatat tctagccttt cctagatgta aatctttacc tccttgttag tgaaattaga 360
tataagccat gatttggaga gggaagaaat ctggaatact taatttcatt taattatcta 420

tgctgatgaa tgcctgtatc attgttaata aaggagaatt gaaaatactc atttctactt 480
tctgccctca aatttctgtt tctatctcaa ctaggcaaga atcagcaggg tgcatgaygc 540
cattttaagc tgcttcacat cagactgaaa tcctaattac agttcataag tgaaacagac 600
taattcmatg ggcaatacct ttkgtawagg tccygtgctt aaaggaggca agtataaatt 660
ttcccantaa ggaatccccg gt 682

<210> 57
<211> 644
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (27)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (619)
<223> n equals a,t,g, or c

<400> 57
ggagnctggg cctgtgcggc ggccgcngta gcgctttgga aggcgcacgg ggcgaagatg 60
gcggcggacg acaggaggcg ctgagggagt tcgtggcggt gacgggcgcc gaggaggacc 120
gggcccgctt ctttctcgag tcggccggct gggacttgca gatcgcgcta gagcttttta 180
tgaggacgga ggggatgaag acattgtgac catttcgcag gcaacccccca gttcagtgtc 240
cagaggcaca gcccccagtg ataatagagt gacatccttc agagacctca ttcatgacca 300
agatgaagat gaggaggaag aggaaggcca gaggtgagtc ttctagaggg ggtcaggggg 360
acagttcaca gggaagtcca gggtaatgtg taaatcacct agaacaggac ctggtaaaac 420
atgtttggtt tattgttagc cattactact gtgggctngt ctgtgtgggt tatatcttag 480
gaagtctctt ctactccttg tagcttagaa gtgacccctg ttccgttact taatgtattt 540
attgaggaat attaggggag ggaaaccaag gaaaagatct agcattccca ctttttggta 600
ttgactaaaa aggatttgna aatcagtttg taaaagaagg tgtc 644

<210> 58
<211> 766
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (760)
<223> n equals a,t,g, or c

<400> 58
gggtcgaccc acgcgtccgg aatgttttgg tgaataaatc tgttcttcag caaccctacc 60
tgcttctcca aactgcctaa agagatccag tactgatgac gctgttcttc catctttact 120
ccctggaaac taaccacgtt gtcttctttc cttcaccacc acccaggagc tcagagatct 180
aagctgcttt ccatcttttc tcccagcccc aggacactga ctctgtacag gatggggccg 240
tcctcttgcc tccttctcat cctaatcccc cttctccagc tgatcaaccy ggggagtact 300
cagtgttcct tagactccgt tatggataag aagatcaagg atgttctcaa cagtctagag 360
tacagtccct ctcctataag caagaagctc tcgtgtgcta gtgtcaaaag ccaaggcaga 420
ccgtcctcct gccctgctgg gatggctgtc actggctgtg cttgtggcta tggctgtggt 480
tcgtgggatg ttcagctgga aaccacctgc cactgccagt gcagtgtggt ggactggacc 540
actgccccgct gctgccacct gacctgacag ggaggaggct gagaactcag ttttgtgacc 600
atgacagtaa tgaaaccagg gtcccaacca agaaatctaa ctcaaacgtc ccacttcatt 660
tgttccattc ctgattctwg ggtaataaag acaaactttg tacctcaaaa aaaaaaaaaa 720
aaaactcgag ggggggcccg gaamcaattc gggctatagn agagcg 766

<210> 59
<211> 2361
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1174)
<223> n equals a,t,g, or c

<400> 59
gttctagatc gcgagcggcc gcccttttt tttttttttt tttggaaagc aaggatcaca 60
cttcccccctc cctgttcctt aatccctttt ctaaaaaggg gggaaaatcc ggatggattt 120
tagggattgg tctggtgtca gctgtgtttt attgcacacc taaatcctga ttataggctt 180
ttcatttctc cgcaaagcct ttattttggc agttaagcca aatgtgtttt ccagaaagtt 240
agttattttc tcctctttct ttcctttctt tcctcccttt ttcccgtctg accccaaacg 300
ttattgtcca aacatgactg gacagcagct tttgtttctt gaccctgtaa tatgacagtc 360
tgctaatatt gacagaaggt gcagtttttg ggttatagtc gtgattttcg ctaatcaatc 420
atattagcag gaaaaaaaat gacttgtttc tgttgtactt gagtcttaag aaaaagtgcc 480
catagtttag tgacaatttc caaaggcttt agtaccacct gtatttcaaa atgggggacc 540
caaactcccg gaagaaacaa gctctgaaca gactacgtgc tcagcttaga aagaaaaaag 600
aatctctagc tgaccagttt gacttcaaga tgtatattgc ctttgtattc aaggagaaga 660
agaaaaagtc agcacttttt gaagtgtctg aggttatacc agtcatgaca aataattatg 720
aagaaaatat cctgaaaggt gtgcgagatt ccagctattc cttggaaagt tccctagagc 780
ttttacagaa ggatgtggta cagctccatg ctcctcgata tcagtctatg agaagggatg 840
taattggctg tactcaggag atggatttca ttctttggcc tcggaatgat attgaaaaaa 900
tcgtctgtct cctgttttct aggtggaaag aatctgatga gcctttttagg cctgttcagg 960
ccaaatttga gtttcatcat ggtgactatg aaaaacagtt tctgcatgta ctgagccgca 1020
aggacaagac tggaatcgtt gtcaacaatc ctaaccagtc agtgtttctc ttcattgaca 1080
gacagcactt gcagactcca aaaaacaaag ctacaatctt caagttatgc agcatctgcc 1140
tctacctgcc acaggaacag ctcacccact gggncagttg gcaccataga ggatcacctc 1200
cgtccttata tgccagagta gagtactgac cagcaaaatg gagaagatca gagaatgcag 1260
cagcagtttt ttttcttgtt ttcttaccac tttattcttt cagagtttaa agaaaatgga 1320

ctcatgcaca gaacactatg cattttgaaa cttgttcatc ctggattttt ttaaatcatt 1380
tttatctcag aacttaaaca aaaattagat gtcgtgcacg gactgtgtga aagaagatgc 1440
tttgcatatt tgctgcactg catcagtatc ttactaaaaa tgtgaaatga aaggactatt 1500
gtacactgaa atgcttaaat gtatctgaaa gcacaaggtg atactcattt ttatggtctt 1560
cccatttgtg ctggtttttg cctctttgac atctgtcatc agtatttaga gggtgagaag 1620
tgaatgtaac aggtataaat aacattttta aaaacaataa ctttgctata atcacagttg 1680
ttccagagca ctgtcagata cattctaatg accagaactg gtttaaaaaa agaaaataca 1740
accatgggaa rgaaatctta aatgaaaaac gcatctcatt gtaggcattt ttgcctcata 1800
ttttactggg ccatgtttgt ttcctggtac tcatgtattt tttttttcca gatctctttc 1860
cccaagttgc tattgtaaga gtattctgct gcgtgtggat gcagttatac acattaaagc 1920
agatctggag tctgaagtag ctataaagca gctataaaac agaaatacat gcatagctgc 1980
agaaaccatg ataggtagag gacttttctt ttggttttgt tttgttttgt tttgttttgt 2040
ttttggtttt acagagaaga gatttttatt acaaagaaaa aaattccagt gaattgtgca 2100
gaaatgctgg tttttacacc atcctaaaga aaaactttac aagggtgttt tggagtagaa 2160
aaaaggttat aaagttggaa tcttaaattg taaaattaac cattgagtgt caaagttcta 2220
aaagcagaac tcatttgtg caatgracat aaggraagac tactgtatag gtttttkttt 2280
tctcctttta aatgaaraaa arcttgctta agggttgcat acttttattg gagtaaatct 2340
gaatgatcct actcccttgg a 2361

<210> 60
<211> 1472
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (129)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (130)
<223> n equals a,t,g, or c

<400> 60
aattcggcac gagcccagat ggcgctggag gaccaggccg ccacactgga gtataagacc 60
atcaaggaac atctcagcag caagagtccc aaccatgggg tgaaccttgt ggagaacctg 120
gacagcctnn cccccaaagt tccacagcgg gaggcctccc tgggtccccc gggagcctcc 180
ctgtctcaga ccggtctaag caagcggctg gaaatgcacc actcctcttc ctacggggtt 240
gactataaga ggagctaccc cacgaactcg ctcacgagaa gccaccaggc accactctca 300
aaagaaacaa cactaactcc tccaattcct ctcacctctc cagaaaccag agctttggca 360
ggggagacaa cccgccgccc gccccgcaga gggtggactc catccaggtg cacagctccc 420
agccatctgg ccaggccgtg actgtctcga ggcagcccag cctcaacgcc tacaactcac 480
tgacaaggtc ggggctgaag cgtacgccct cgctaaagcc ggacgtaccc cccaaaccat 540
cctttgctcc cctttccaca tccatgaagc ccaatgatgc gtgtacataa tcccaggggg 600
agggggtcag gtgtcgaacc agcaggcaag gcgaggtgcc cgctcagctc agcaaggttc 660
tcaactgcct cgagtaccca ccagaccaag aargcctgcg gcagagccga ggacgctggg 720
tcctcctctc tgggacacag gggtactcac gaaaactggg ccgcgtggtt tggtgaaggt 780
ttgcaacggc ggggactcac cttcattctc ttccttcact ttcccccaca ccctacaaca 840
ggtcggaccc acaaaagact tcagttatca tcacaaacat gagccaaaag cacatacctа 900
ccccatcccc cacccccmca cacacacaca catgcacaca acacatacac acacacgcac 960

agaggtgaac agaaactgaa acattttgtc cacaacttca cgggacgtgg ccagactggg 1020
tttgcgttcc aacctgcaaa acacaaatac attttttaaa atcaagaaaa tttaaaaaga 1080
caaaaaaaaa agaattcatt gataattcta actcagactt taacaatggc agaagtttac 1140
tatgcgcaaa tactgtgaaa tgcccgccag tgttacagct ttctgttgca gcagataaat 1200
gccatgttgg gcaactatgt catagatttc tgctcctcct ctcttttaat gaaataacgt 1260
gaccgttaac gcaagtaact ctttatttat tgttcaccct ttttttcctt aaggaaagga 1320
ctcttccaaa tatcatccta tgaacagctc ttcagaaagc ccattgaaag ttaaactatt 1380
taacgtgaaa tccattaact ggaataattg agtttcttta tttttacaat aaattcactg 1440
agtaaataaa aaaaaaaaaa aaaaaaaaaa aa 1472

<210> 61
<211> 1672
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (884)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1583)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1645)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1663)
<223> n equals a,t,g, or c

<400> 61
ccagcctcca ggcacccggg atccagcgcc gccgctcata acacccgcga ccccgcagct 60
aagcgcagct cccgacgcaa tggacccggc gctggcagcc cagatgagcg aggctgtggc 120
cgagaagatg ctccagtacc ggcgggacac agcaggctgg aagatttgcc gggaaggcaa 180
tggagtttca gtttcctgga ggccatctgt ggagtttcca gggaacctgt accgaggaga 240
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<210> 62
<211> 1540
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1265)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1468)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1507)
<223> n equals a,t,g, or c

<400> 62

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<211> 1044
<212> DNA
<213> Homo sapiens

<400> 63
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<210> 64
<211> 851
<212> DNA
<213> Homo sapiens

<400> 64
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<210> 65
<211> 2793
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (2793)
<223> n equals a,t,g, or c

<400> 65
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gcatagacaa gcttaacatt gtagatgttt ctcttcaaaa atcatcttaa acatttgcat 180
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gctctgaaaa ttaccgcgtt tagtaattat agtgggctta taaaaacatg caactctttt 480
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<210> 66
<211> 303
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (108)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (278)
<223> n equals a,t,g, or c

<400> 66
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attaatactg atgtgaatgg atgcatttgt tttgcagtgg tgactggcct aggcaggttt 180
gggatctgtg aaagaattga ttcattttca aaattattcc ataaagttaa aaagttacac 240
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aag 303

<210> 67
<211> 1410
<212> DNA
<213> Homo sapiens

<400> 67
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<210> 68
<211> 1024
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<400> 68
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<210> 69
<211> 1848
<212> DNA
<213> Homo sapiens

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<222> (1761)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1844)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1847)
<223> n equals a,t,g, or c

<400> 69
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<210> 70
<211> 2682
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (647)
<223> n equals a,t,g, or c

<400> 70
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<210> 71
<211> 412
<212> DNA
<213> Homo sapiens

<400> 71
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ggaccgcccc aaccctcgga gcccccact cagtaggtct gaaggcctcc atttgtaccg 180
aaacaccccg ctcacgctga cagcctccta ggytccctga ggtacctttc cacccagacc 240
ctccttcccc accccataag ccctgagact cccgcctttr acctgacgat cttcccccctt 300
cccgccttca ggttcctcct aggcgctcag aggccgctct ggggggttgc ctcgagtccc 360
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<210> 72
<211> 1361
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (46)
<223> n equals a,t,g, or c

<400> 72
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ttawggtatc tgawactcct ctaggacttg cgagggccgt gtcctgagta gtgtgtgmcc 180
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agcagataaa agtgacgagt ggtttgccaa acacaataaa cccaaagctt caggttaacg 480
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<210> 73
<211> 928
<212> DNA
<213> Homo sapiens

<400> 73
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ggtgccagag atagcacaca cctacaaggc cgacagagag aagtacaaca gactagcaag 180
agagtggaca caaaaatatg ctatgtaagt gccttggagg ttttacatga gacactgtcc 240
aagagaagct ggcagagagg tcttccctta aaactttggg ctgttggctg agccattcaa 300
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tggtgccatt ttcagcaatt acggctttga cagtgccacc tctttgatgc caaatcagca 420
accattgttg ttatgatctg cagtcttcct ggtgacactg gaatctctct ctctgccgcc 480
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agagcaaaat tttgaaaacc tctaggag 928

<210> 74
<211> 1186
<212> DNA
<213> Homo sapiens

<400> 74
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agaccgacct tgaccgccca cctggcagga gcaggacagg acggccggac gcggccatgg 120
ccgagctccc ggggcccttt ctctgcgggg ccctgctagg cttcctgtgc ctgagtgggc 180
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<210> 75
<211> 933
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (791)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (794)
<223> n equals a,t,g, or c

<400> 75
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gtgtaactgt gcataatccc gaaaatcaaa gctacttgat agcatataaa gattcccaac 180
ttattgtttc atcagctaaa gcattacagc attgtgaaga actgattcag cagtacaacc 240
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tagtggtttg atttgtttt tttcctccaa acc 933

<210> 76
<211> 1964
<212> DNA
<213> Homo sapiens

<400> 76
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aacagaacgg tcagccttca aaaaaaaaa aaaaaaaaaa aaaa 1964

<210> 77
<211> 1802
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1680)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1747)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1757)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (1800)
<223> n equals a,t,g, or c

<400> 77
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gttcttgtat tgatgaagtg aaacaaagtg gggccattgt tcattttatt gctttgggaa 180
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ta 1802

<210> 78
<211> 995
<212> DNA
<213> Homo sapiens

<400> 78
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agaacgttgc tggtgaaata gtcctcatca caggtgctgg aagtggactc ggaaggctct 240
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cctgcgattg cagccaaaag gaaggagtgt atagagtasc cgaccaggtt aaaaaagaag 420
tcggcgatgt ttccatccta atcaacaatg ccggaatcgt aacaggcaaa aagttccttg 480
actgtccaga tgagcttatg gaaaagtcat ttgatgtgaa tttcaaagca catttatgga 540

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cagcctttgg gtttgctgaa tctgtatttg tagaaacatt tgtccaaaaa caaaagggga 720
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ctccaaatcc cmccaggaaa aaccactttt aaaaa 995

<210> 79
<211> 1215
<212> DNA
<213> Homo sapiens

<400> 79
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tgtaccacac tgaggagcgc ggccagccct gctcgcagaa ttaccgcctc ttctttaaga 180
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<211> 2660
<212> DNA
<213> Homo sapiens

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<210> 81
<211> 1790
<212> DNA
<213> Homo sapiens

<400> 81
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<210> 82
<211> 1350
<212> DNA
<213> Homo sapiens

<400> 82
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<210> 83
<211> 1746
<212> DNA
<213> Homo sapiens

<400> 83
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<210> 84
<211> 1491
<212> DNA
<213> Homo sapiens

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<222> (176)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (711)
<223> n equals a,t,g, or c

<400> 84
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<210> 85
<211> 968
<212> DNA
<213> Homo sapiens

<400> 85
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<210> 86
<211> 3068
<212> DNA
<213> Homo sapiens

<400> 86
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aaaaaaaa 3068

<210> 87
<211> 2230
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2227)
<223> n equals a,t,g, or c

<400> 87
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<210> 88
<211> 1163
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (159)
<223> n equals a,t,g, or c

<400> 88
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<210> 89
<211> 1939
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (20)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (31)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (33)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1609)
<223> n equals a,t,g, or c

<400> 89
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gctgtgctgt ttgtatttgt tcccttgggt tttttttcc tgcctaattt ctgtgatttc 1860
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ccgctctaga ggatccctc 1939

<210> 90
<211> 2032
<212> DNA
<213> Homo sapiens

<400> 90
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gaggtgtcaa accaaattct ctcggtttgg aaacggagaa aatctaaaaa tgaggatgtg 180
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tcaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aagggggagg gg 2032

<210> 91
<211> 1788
<212> DNA
<213> Homo sapiens

<400> 91
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<210> 92
<211> 495
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (402)
<223> n equals a,t,g, or c

<400> 92
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cacggtcacc gtctc 495

<210> 93
<211> 1377

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1367)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1371)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1376)
<223> n equals a,t,g, or c

<400> 93
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<210> 94
<211> 2819
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (82)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (83)
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<220>
<221> misc feature
<222> (84)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (2816)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2817)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2818)
<223> n equals a,t,g, or c

<400> 94
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<211> 705
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<213> Homo sapiens

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (687)
<223> n equals a,t,g, or c

<400> 95

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<210> 96
<211> 3472
<212> DNA
<213> Homo sapiens

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<222> (55)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (69)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3457)
<223> n equals a,t,g, or c

<220>
<221> misc feature
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3470)
<223> n equals a,t,g, or c

<400> 96
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<211> 1216
<212> DNA
<213> Homo sapiens

<400> 97
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<210> 98
<211> 1186
<212> DNA
<213> Homo sapiens

<400> 98
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<210> 99
<211> 1120
<212> DNA
<213> Homo sapiens

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<210> 100
<211> 1225
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (286)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (287)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (288)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1213)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1225)
<223> n equals a,t,g, or c

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<210> 101
<211> 1213
<212> DNA
<213> Homo sapiens

<400> 101
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<210> 102
<211> 1564
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1509)
<223> n equals a,t,g, or c

<400> 102
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aaataaagat ttttgaccaa aatccagaaa atggtatgag agaaaaataa attccagcta 180
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taccctgtga gtatgagata aattagtgac aatcagaaca agtttcagta tcagatgttc 1380
aagaggaagt tgctattgca ttgattttaa tatttgtaca taaacactga tttttttgag 1440
cattattttg tatttgttgt actttaatac ctggtgtaca gttccagaaa taaaaatctg 1500
ggaatcttna aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa gggcggccgc 1560
tcta 1564

<210> 103
<211> 1457

<212> DNA
<213> Homo sapiens

<400> 103
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cacaaagcca aggctctgct ctttgaggta aaggagatct tcaggaagtc acctttcctg 180
gtaccaaagg gcagtgttag catcatggat ggatccgacg aaggcatatt agcttgggtt 240
actgtgaatt ttctgacagg tcagctgcat ggccacagac aggagactkt ggggaccttg 300
gacctagggg gagcctycac ccaaatcacg ttcctgcccc agtttgagaa aactctggaa 360
caaactccta kgggctacct cacttccttt gagatgttta acagcactta taakctctat 420
acacatagtt acttgggatt tggattgaaa gctgcaagac tagcaaccct gggagccctg 480
gagacagaag ggactgatgg gcacactttc cggagtgcct ktttaccgag atgkttggaa 540
gcagagtgga tctttggggg tgtgaaatac cagtatggtg scaaccaaga aggggaggtg 600
ggctttgagc cctgctatgc cgaagtgctg agggtggtac gaggaaaact tcaccagcca 660
gaggaggtcc agagaggttc cttctatgct ttctcttact attatgaccg agctgttgac 720
acagacatga ttgattatga aaaggggggt attttaaaag ttgaagattt tgaaagaaaa 780
gccagggaag tgtgtgataa cttggaaaac ttcacctcag gcagtccttt cctgtgcatg 840
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caaaaagtat agttttggaa cttaaccttg gagtgagagc ccagggacag gtccctggaa 1260
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tcctcttaaa tggtaaactg acttattgca atcccaagac ccatcaatat cagtattttt 1380
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aaaaaaaaaa ctcgtag 1457

<210> 104
<211> 785
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (748)
<223> n equals a,t,g, or c

<400> 104
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agcaatggca ttaagaggtg gggcctttgg ggctgggata caggagtgag ccactgcgcc 180
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acagcaaact tgttgctgct gttgtcaacc tgaaggcctc tcaaatgcca gcttcaagca 300
gggtgtgaat tggccagtgt cagatctcag gagtcctgtg ttgagagtgt ggctttcagc 360
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ggaggtcaga acccaaggaa gggagtgaga cctccactcc cagtggggga cctggccacc 480
catccttggg gacctgagaa agcgtacttc accttggggt gaaggctggg tggggccaga 540
gggaccagtg ccctcctcag tgcttagggg cagagccacc tgcagcaatg gtatctgcat 600

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tcactgcttc tttctccctg ggaagaatgc gtggactctg cctggtgata gactgaagcc 720
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ttagt 785

<210> 105
<211> 921
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<400> 105
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aaacagttgc cccagaaaga catgtcttgt tttaaagccc agaacctgaa attattatag 120
attttattcg gtaataagga actttgcatg tgtaattact taaggatatg aagatgagat 180
tgtcctggat tattaagcac cctaaatgcc atgtacaggt gtccttccaa gagaacagaa 240
gaggagacac agacacagag caggaggaca cgtggagaca gaggcagact ggagtgatgc 300
ggccacaagc ccagggacac ctggagcccc caggagctgg gagaggcagg aaggatcctc 360
ccctagagcc tccaggggga actggaggat gcgtaagaga cccagaactt ccacagaagg 420
aggaaaatta acctcctgct tctctagact gttccaaagc tgaaccctag aaagcaaagc 480
tgatacagaa gcatccaggc tgcaggagta caggtcgcaa gtgctgagcg tgggccttgg 540
gtgtgtctca tgggggaaaa aaaactgtga aaaacctcag agtagcatct tcacagtaac 600
gcacggacga tccctaaact gccttgtaaa caaaaatgag agcttgagtc agaggaagcc 660
gagacaatat ccttcctcga caacgtgcga gaaccctgac gtcccccagc aaaggaagac 720
gttgcaagca ggcaaaatgc gtcgattttt ttttttgtc agtatgatga tttttgcagc 780
cacttggcta tggagagcag ccgacacccc ctcttacagc cgtggatgtt tcctggaagc 840
tgactcagtc tgttcactgg ttgagctttg agtgaaaaga taacacaggt ctattgactc 900
acacacatgt tttaagatgg a 921

<210> 106
<211> 592
<212> DNA
<213> Homo sapiens

<400> 106
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acccctctgc cccagtcccc ccggcccagg cggccgacga tgtctactgt tgtggagctg 120
aacgtcgggg gtgagttcca caccaccacc ctgggtaccc tgaggaagtt tccgggctca 180
aagctggcag agatgttctc tagcttagcc aaggcctcca cggacgcgga gggccgcttc 240
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gtgcccacac agcacatccc tgaagtgtac cgtgaggctc agttctacga aatcaagcct 360
ttggtcaagc tgctggagga catgccacag atctttggtg agcaggtgtc tcggaagcag 420
tttttgctgc agtgccgggc tacagcgaga acctgggagc tcatggtgcg cctggcacgt 480
gcagaagcca taacagcacg gaaktccagg tgyttgtgtg cctggtgaaa cttgagggag 540
caggatgcat tattattcag aggtcctgtg tttttcttgc aggataagaa gg 592

<210> 107

<211> 2248
<212> DNA
<213> Homo sapiens

<400> 107
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ggcctttgct gcgggcgccg gcgctggcgg ccgtgccggg aggaaaacca attctgtgtc 120
ctcggaggac cacagcccag ttgggcccca ggcgaaaccc agcctggagc ttgcaggcag 180
gacgactgtt cagcacgcag accgccgagg acaaggagga acccctgcac tcgattatca 240
gcagcacaga gagcgtgcag ggttccactt ccaaacatga gttccaggcc gagacaaaga 300
agcttttgga cattgttgcc cggtccctgt actcagaaaa agaggtgttt atacgggagc 360
tgatctccaa tgccagcgat gccttggaaa aactgcgtca caaactggtg tctgacggcc 420
aagcactgcc agaaatggag attcacttgc agaccaatgc cgagaaaggc accatcacca 480
tccaggatac tggtatcggg atgacacagg aagagctggt gtccaacctg gggacgattg 540
ccagatcggg gtcaaaggcc ttcctggatg ctctgcagaa ccaggctgag gccagcagca 600
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aggtctattc ccgctcggca gccccgggga gcctgggtta ccagtggctt tcagatggtt 720
ctggagtgtt tgaaatcgcc gaagcttcgg gagttagaac cgggacaaaa atcatcatcc 780
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gccacggaca tcctgcccaa gtggctgcgc ttcatccgag gtgtggtgga cagtgaggac 1200
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gccatgaaga agaaagacac agaggttctc ttctgctttg agcagtttga tgagctcacc 1620
ctgctgcacc ttcgtgagtt tgacaagaag aagctgatct ctgtggagac ggacatagtc 1680
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aacgtgaagg tgaccctccg actggacacc caccctgcca tggtcaccgt gctggagatg 1860
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cagctcctgc agcccacgct ggagatcaac ccccaggcacg cgctcatcaa gaagctgaat 1980
cagctgcgcg caagcgagcc tggcctggct cagctgctgg tggatcagat atacgagaac 2040
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agatgacagc cccacctcct tgagctttat ttacctaaat ttaaaggtat ttcttaaccc 2220
gaaaaaaaaa aaaaaaaaaa cctctgcc 2248

<210> 108
<211> 785
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (769)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (771)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (785)
<223> n equals a,t,g, or c

<400> 108
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tccagagcaa aggtcattca gccgcttgaa tcagcctttt ccccccaccc ggtccccaac 120
tttgtttacc cgataaggaa ggtcagcatt caaagtcaag aagcgccatt tatcttcccg 180
tgcgctctac aaatagttcc gtgagaaaga tggccgggaa ctcgatcctg ctggctgctg 240
tctctattct ctcggcctgt cagcaaagtt attttgcttt gcaagttgga aaggcaagat 300
taaaatacaa agttacgccc ccagcagtca ctgggtcacc agagtttgag agagtatttc 360
gggcacaaca aaactgtgtg gagttttatc ctatattcat aattacattg tggatggctg 420
ggtggtattt caaccaagtt tttgctactt gtctgggtct ggtgtacata tatggccgtc 480
acctatactt ctggggatat tcagaagctg ctaaaaaacg gatcaccggt ttccgactga 540
gtctggggat tttggccttg ttgaccctcc taggtgccct gggaattgca aacagctttc 600
tggatgaata tctggacctc aatattgcca agaaactgag gcggcaattc taacttttc 660
tcttcccttt aatgcttgca gaagctgttc ccaccatgaa ggtaatatgg tatcatttgt 720
taaataaaaa taaagtcttt aaaaaaaaaa aaaaaaaaaa gggggccnc nctaaaaaat 780
ccaan 785

<210> 109
<211> 611
<212> DNA
<213> Homo sapiens

<400> 109
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agtggtaggt aaggaagggg ccttaacctc tgctggtgac cagaagcctg catttctgca 180
ttctgcttaa ttccctttcc ttagatttga aagaagccaa cactaaacca caaatataca 240
acaaggccat ttctcaaac gagagtcagc ctttaacgaa atgaccatgg ttgacacaga 300
gatgccattc tggcccacca actttgggat cagctccgtg gatctctccg taatggaaga 360
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tccacattac gaagacattc cattcacaag aacagatcca gtggttgcag attacaagta 480
tgacctgaaa cttcaagagt accaaagtgc awtcaaagtg gagcctgcat ctccacctta 540
ttattctgag aagactcagy tctacaataa gcctcatgaa gagccttcca actccctcat 600
ggcaattgaa t 611

<210> 110
<211> 664
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (614)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (616)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (633)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (649)
<223> n equals a,t,g, or c

<400> 110
aattcggcac gagtttggtt tttncctcta tgtaggtatc tggtaaagta atgaatttat 60
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tcgttccata tttggtgaag atgcacttgc aaatgtcagc attgagaagc caattcacca 180
gggaccagat gctgctgtta ccggccatat aagaattcgt gcaaagagcc agggaatggc 240
cttaagtctt ggagataaaa tcaacttgtc acagaagaaa actagtatat aaaaataaac 300
aaaaagtcct tgaagcttta cagttaattt aggtatgggc ttactggact ccaacatctt 360
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tttatagcct ttcccttaaa tcaagattga gtttaaaatt atagtttgtc ttttgtctta 480
acagttctga atgctgtcct caaagtatat aatgtttcat gtaccaagac ccttttcaca 540
gtcaataaac agatctattc ataaaaaaaa aaaaaaaaag ggcggcccgc tctagaggac 600
cccaagctta cgtncncgtg cattgcgacg tcntagctct tttataggng tcaccctaaa 660
tttc 664

<210> 111
<211> 4065
<212> DNA
<213> Homo sapiens

<400> 111

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tcccaagtcg cccccgtccc gcaagaaaga tgattccttc ttggggaaac tcggagggac 180
cctggcccgg aggaagaaag ccaaggaggt gtccgagctg caggaggagg gaatgaacgc 240
catcaacctg cccctcagcc caattccctt tgagctggac cccgaggaca cgatgctgga 300
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ctgatgaagg tattaattga ctggattaat gatgtgttgg ttggagaaag aatcattgtg 420
aaagacctag ctgaagattt gtatgatgga caagtcctgc agaagctttt cgagaaactg 480
gagagtgaga agctaaatgt ggctgaggtc acccagtcag agattgctca gaagcaaaaa 540
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tggaatgtgg attctgttca tgccaagagc ctggtggcca tcttacacct gctcgttgct 660
ctgtctcagt atttccgtgc accaattcga ctcccagacc atgtttccat ccaagtggtt 720
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<210> 112
<211> 1492
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1487)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1491)
<223> n equals a,t,g, or c

<400> 112
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<213> Homo sapiens

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<213> Homo sapiens

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<221> misc feature
<222> (3730)
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<211> 1315
<212> DNA
<213> Homo sapiens

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<210> 116
<211> 1320
<212> DNA
<213> Homo sapiens

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<210> 117
<211> 2025
<212> DNA
<213> Homo sapiens

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<222> (1339)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1916)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1944)
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<210> 118
<211> 1295
<212> DNA
<213> Homo sapiens

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<222> (1286)
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<220>
<221> misc feature
<222> (1292)
<223> n equals a,t,g, or c

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<210> 119
<211> 1257
<212> DNA
<213> Homo sapiens

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<212> DNA
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<211> 1278
<212> DNA
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<222> (149)
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<212> DNA
<213> Homo sapiens

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<210> 124
<211> 379
<212> DNA
<213> Homo sapiens

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<222> (340)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<400> 124

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<210> 125
<211> 1267
<212> DNA
<213> Homo sapiens

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<211> 841
<212> DNA
<213> Homo sapiens

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<210> 127
<211> 1172
<212> DNA
<213> Homo sapiens

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<222> (119)
<223> n equals a,t,g, or c

<400> 127
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<210> 128
<211> 891
<212> DNA
<213> Homo sapiens

<400> 128
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<210> 129
<211> 2461
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
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<210> 130
<211> 2197
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1381)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2194)
<223> n equals a,t,g, or c

<400> 130
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cagccaccac agattcaaaa cggccccatg aatggctgcg agaaggacag ctcgtccaca 540
gattctgcta acgaaaaacc agcccttatc cctcgtgaga aaaagatctc gatacttgag 600
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<210> 131
<211> 464
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (397)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (405)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (420)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<400> 131
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gcgttggaac ggttggctac taccaattta tggaccgcct attaagtggc atggttacag 180
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<210> 132
<211> 1950

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1941)
<223> n equals a,t,g, or c

<400> 132
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tgaggtcagg atttctcaaa ctgattcctt tctttgcata tgagtatttg aaaataaata 1860
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aaaaaaaaaa aaaaaaaaaa naaaaaaaaa 1950

<210> 133
<211> 2093
<212> DNA
<213> Homo sapiens

<400> 133
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<210> 134
<211> 729
<212> DNA
<213> Homo sapiens

<220>
<221> misc·feature
<222> (646)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (665)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (725)
<223> n equals a,t,g, or c

<400> 134
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tgctgagtac cagcccggtt ctccagttta ttcctccaag tgccaggact gcgtgtgcac 120
ggacaaggtg gacaacaaca ccctgctcaa cgtcatcgcc tgcacccacg tgccctgcaa 180
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caaggccagg ccctggacca cagcttgctc ctgctgcaaa gaaganaaaa ccagccagcg 660
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gccantgcc 729

<210> 135
<211> 1189
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1160)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1175)
<223> n equals a,t,g, or c

<400> 135
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<210> 136
<211> 1466
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1291)
<223> n equals a,t,g, or c

<400> 136
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<210> 137
<211> 140
<212> DNA
<213> Homo sapiens

<400> 137
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actaaaccat ccaatcggta 140

<210> 138
<211> 4142
<212> DNA
<213> Homo sapiens

<400> 138
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ctmgaggaag aaaaggaaga actagctcag tatcagaagt gggataaaat gagacgagcc 780
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<213> Homo sapiens

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<223> n equals a,t,g, or c

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<222> (1704)
<223> n equals a,t,g, or c

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<211> 1240
<212> DNA
<213> Homo sapiens

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<210> 141
<211> 671
<212> DNA
<213> Homo sapiens

<400> 141
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<210> 142
<211> 3265
<212> DNA
<213> Homo sapiens

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<222> (3234)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3256)

<223> n equals a,t,g, or c

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<211> 765
<212> DNA
<213> Homo sapiens

<400> 143
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tcagcggtct gcgcctggca gcaggaagct gttttaggtt atgtgaaaga gatgtttcct 180
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<210> 144
<211> 1694
<212> DNA
<213> Homo sapiens

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<210> 145
<211> 823
<212> DNA
<213> Homo sapiens

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<222> (182)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (731)
<223> n equals a,t,g, or c

<220>
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<222> (817)
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<221> misc feature
<222> (821)

<223> n equals a,t,g, or c

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ccttgctctg gttcctgggc agagctcagc agtacttggc agcatgggac ccagcttcct 300
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gcctggcctc agaggaaagc ttagctctgg aagtggagca gcagctgggc ctggagatcc 420
agaagctgac tgcacagatc cagctcctgc ctgaagagtc actaagtgtc ttttctcaag 480
aatgtcataa acaagccatg caaggtttca agctctacat gccacggggt cggtactggc 540
ggcttcgtct ctgtcctgaa cctcccagtg ctcctagtga gtatgctggt ttagtggtcc 600
gcaccgtact ggagcctgtg ttgcaaggat tgcaagggtt gcacctcaag cccaggcccc 660
tgcccttggt caggctctga cggscatcgt gggtgcctgg cttgaccaca ttcttaccca 720
tgggattcgg nttcaacctg canggagcnc tkcancttaa acaagacttt ggaatggtca 780
ggagtttgtg gaaaagagca tggacctgtc cctgatntcg nca 823

<210> 146
<211> 1134
<212> DNA
<213> Homo sapiens

<400> 146
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gatgactctt caaggattag aatatttaca tcaacattgg atcctacata gggatctgaa 180
accaaacaac ttgttgctag atgaaaatgg agttctaaaa ctggcagatt ttggcctggc 240
caaatctttt gggagcccca atagagctta tacacatcag gttgtaacca ggtggtatcg 300
ggcccccgag ttactatttg gagctaggat gtatggtgta ggtgtggaca tgtgggctgt 360
tggctgtata ttagcagagt tacttctaag ggttcctttt ttgccaggag attcagacct 420
tgatcagcta acaagaatat ttgaaacttt gggcacacca actgaggaac agtggccgga 480
catgtgtagt cttccagatt atgtgacatt taagagtttc cctggaatac ctttgcatca 540
catcttcagt gcagcaggag acgacttact agatctcata caaggcttat tcttatttaa 600
tccatgtgct cgaattacgg ccacacaggc actgaaaatg aagtatttca gtaatgcgcc 660
agggccaaca cctggatgtc agctgccaag accaaactgt ccagtggaaa ccttaaagga 720
gcaatcaaat ccagctttgg caataaaaag gaaaagaaca gaggccttag aacaaggagg 780
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atagccaaaa aggcaaataa tggaaaaata gtaaacatta agtaaatgct gtagaagtga 900
gtttgtaaat attctacaca tgtaaaatat gtaaaactat gggttatttt tattaaatgt 960
attttaaaat aaaaatttaa ttctggtttt tctgattaga gtgcmaaagt gagaaaagtt 1020
caatactctt gaatgtagaa ttgaaaatgc attagggaaa acttaataaa aattattacc 1080
agttatttgg aagatctgac ccatatagta tcacaaatct gtagtagcat gggt 1134

<210> 147
<211> 1486
<212> DNA
<213> Homo sapiens

<400> 147
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gtgggagagg tatcggcagg ggcagcgctg ccgccggggc ctggggctga cccgtctgac 120
ttcccgtccg tgccgagccc actcgagccg cagccatgtc tggggacgag atgatttttg 180
atcctactat gagcaagaag aaaaagaaga agaagaagcc ttttatgtta gatgaggaag 240
gggataccca aacagaggaa acccagcctt cagaaacaaa agaagtggag ccagagccaa 300
ctgaggacaa ggatttggaa gctgatgaag aggacactag gaaaaaagat gcttctgatg 360
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aaccaactga accagaggat gaccttgaca ttatgcttgg caataaaaag aagaaaaaga 540
agaatgttaa gttcccagat gaggatgaaa tactagagaa agatgaagct ctagaagatg 600
aagacaacaa aaaagatgat ggtatctcat tcagtaatca gacaggccct gcttgggcag 660
gctcagaaag agactacaca tacgaggagc tgctgaatcg agtgttcaac atcatgaggg 720
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ttgacatact cattgcctac tttaacacct gtcagagaaa cgtgatatgg ggtaaggagg 1380
tgctttttta aaatcgttca tagacttctg taaaatgcaa gataaattaa agttattata 1440
acagtgataa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 1486

<210> 148
<211> 153
<212> DNA
<213> Homo sapiens

<400> 148
cgcctgtgca gcgcaagatc gaggctcgct cggcagagga ctccttcaca ggcttcgtcc 60
ggaccctgta ctttgctgac acctacctga aggagtgcca aggctgagcg gccaggcctc 120
cagaacatgg agctggcgcc tgtgcagcgc aag 153

<210> 149
<211> 882
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (870)
<223> n equals a,t,g, or c

<400> 149
acgaagggca aagntggtgt caccncggtg cgccgtctag actagtggat cccggctcag 60
gattcgcacg tgcctcctgg tctcagtatg gcgctgtcct gggttcttac agtcctgagc 120
ctcctacctc tgctggaagc ccagatccca ttgtgtgcca acctagtacc ggtgcccatc 180
accaacgcca ccctggaccr gatcactggc aagtggtttt atatcgcatc ggcctttcga 240
aacgaggagt acaataagtc ggttcaggag atccaagcaa ccttctttta cttcaccccc 300
aacaagacag aggacacgat ctttctcaga gagtaccaga cccgacagga ccagtgcatc 360
tataacacca cctacctgaa tgtccagcgg gaaaatggga ccatctccag atacgtggga 420
ggccaagagc atttcgctca cttgctgatc ctcagggaca ccaagaccta catgcttgct 480
tttgacgtga acgatgagaa gaactggggg ctgtctgtct atgctgacaa gccagagacg 540
accaaggagc aactgggaga gttctacgaa gctctcgact gcttgcgcat tcccaagtca 600
gatgtcgtgt acaccgattg gaaaaaggat aagtgtgagc cactggagaa gcagcacgag 660
aaggagagga aacaggagga gggggaatcc tagcaggaca cagccttgga tcaggacaga 720
gacttggggc catcctgccc ctccaacccg acatgtgtac ctcagctttt tccctcactt 780
gcatcaataa agcttctgtg tttggaacag ctaaaaaaaa aaaaaaaaaa aaaaaaaaaa 840
actcgagggg gggcccgkaa cccaatcgcn tgatattatt ag 882

<210> 150
<211> 1508
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (126)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (155)
<223> n equals a,t,g, or c

<400> 150
ctaaggaggg gtgaaccggc ccaggtcgga aacggagcag gtcaaaactc ccgtgctgag 60
gtgggaggat cgcttgagcc caggagttct gggctgtagt gcgctatgcc gatcgggtgt 120
ccgcantcta gccttggcaa cagtgcaaga ctgtntcaaa aacagcaaca garagcagga 180
cgtgagactt ctacctgctc actcagaatc atttctgcac caaccatggc cacgtttgtg 240
gagctcagta ccaaagccaa gatgcccatt gtgggcctgg gcacttggaa gtctcctctc 300
ggcaaagtga aagaagcagt gaaggtggcc attgatgcag gatatcggca cattgactgt 360
gcctatgtct atcagaatga acatgaagtg ggggaagcca tccaagagaa gatccaagag 420
aaggctgtga agcgggagga cctgttcatc gtcagcaagt tgtggcccac tttctttgag 480
agaccccttg tgaggaaagc ctttgagaag accctcaagg acctgaagct gagctatctg 540
gacgtctatc ttattcactg gccacaggga ttcaagtctg ggatgacct tttccccaaa 600
gatgataaag gtaatgccat cggtggaaaa gcaacgttct tggatgcctg ggaggccatg 660
gaggagctgg tggatgaggg gctggtgaaa gcccttgggg tctccaattt cagccacttc 720
cagatcgaga agctcttgaa caaacctgga ctgaaatata aaccagtgac taaccaggtt 780
gagtgtcacc catacctcac gcaggagaaa ctgatccagt actgccactc caagggcatc 840

accgttacgg cctacagccc cctgggctct ccggatagac cttgggccaa gccagaagac 900
ccttccctgc tggaggatcc caagattaag gagattgctg caaagcacaa aaaaaccgca 960
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aagcttattt aagatcacag tgaacttagt cctgttatag acgagaatcg aggtgctgtt 1320
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aataaggaaa tgacaatttt ttccacttat ctgatcagaa caaatgttta ttaagcatca 1440
gaaactctgc caacactgag gatgtaaaga tcaataaaaa aaataataat cataaaaaaa 1500
aaaaaaaa 1508

<210> 151
<211> 1232
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1213)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1217)
<223> n equals a,t,g, or c

<400> 151
naactgngct agcatgccca gcccacagag agcctccact agagtgatgc taagtggaaa 60
tgtgaggtgc agctgccaca gagggccccc accagggaaa tgtctagtgt ctagtggatc 120
caggccacag gagagagtgc cttgtggagc gctgggagca ggacctgacc accaccagga 180
ctccagcctg ggtgacaggg tgaacgccat ctcaaaaaat aaaaattaaa aaataaaaaa 240
agaacctgga tctcaattta atttttcata ttcttgcaat gaaatggact tgaggaagct 300
aagatcatag ctagaaatac agataattcc acagcacatc tctagcaaat ttagcctatt 360
cctattctct agcctattcc ttaccacctg taatcttgac catatacctt ggagttgaat 420
attgttttca tactgctgtg gtttgaatgt tccctccaac actcatgttg agacttaatc 480
cctaatgtgg caatactgaa aggtggggcc tttgagatgt gattggatcg taaggctgtg 540
ccttcattca tgggttaatg gattaatggg ttatcacagg aatgggactg gtggctttat 600
aagaagagga aaagagaact gagctagcat gcccagccca cagagagcct ccactagagt 660
gatgctaagt ggaaatgtga ggtgcagctg ccacagaggg cccccaccag ggaaatgtct 720

agtgtctagt ggatccaggc cacaggagag agtgccttgt ggagcgctgg gagcaggacc 780
tgaccaccac caggacccca gaactgtgga gtcagtggca gcatgcagcg ccccttggg 840
aaagctttag gcaccagcct gcaacccatt cgagcagcca cgtaggctgc acccagcaaa 900
gccacaggca cggggctacc tgaggccttg gggcccaat ccctgctcca gtgtgtccgt 960
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tttgaagtaa aataaaagct gtgtttgagc atcaaaaaaa aaaaaaaaaa aaaaaaaaaa 1140
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1200
aaaaaaaaaa aangggnggc cgttttaaag ga 1232

<210> 152
<211> 999
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (917)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (951)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (995)
<223> n equals a,t,g, or c

<400> 152
gcgcagctcc gccggcgcct ggtcccagcg cccgcggcgc cgcgtccccg gcccaaccat 60
ggcrtcctcc gcggccggct gcgtggtgat cgttggcagt ggagtcattg ggygaagctg 120
ggccatgctg tttgccagtg gaggcttcca ggtgaaactc tatgacattg agcaacagca 180
gataaggaay gccctggaaa acatcagaaa ggagatgaag ttgctggagc aggcaggttc 240
tctgaaaggc tccctgagtg tggaagagca gctgtcactc atcagtggtt gtcccaatat 300
ccaagaagca gtagagggyg ccatgcwcat ycwgtgaatc cgccatacta catcccgctg 360
gttgagctgg tcccccaccc ggagacggcc cctacgacag tggacagaac ccacgccctg 420
atgaagaaga ttggacagtg ccccatgcga gtccagaagg aggtggccgg cttcgttctg 480
aaccgcctgc aatatgcaat catcagcgag gcctggcggc tagtggagga aggaatcgtg 540
tctcctagtg acctggacct tgtcatgtca gaagggttgg gcatgcggta tgcattcatt 600
ggacccctgg aaaccatgca tctcaatgca gaaggtatgt taagctactg cgacagatac 660
agcgaaggca taaaacatgt cctacagact tttggaccca ttccagagtt ttccagggcc 720
actgctgaga aggttaacca ggacatgtgc atgaaggtcc ctgatgaccc ggagcactta 780
gctgccagga ggcagtggag ggacgagtgc ctcatgagac tcgccaagtt gaaragtcaa 840
gtgcagmyaa sctggaratt tccacctttt cttttcagct tgattgcatt tgactatatt 900
ttacagccag tgattgnagt ttcatggtaa tatgtggcaa aatatttttg naattatttt 960
ctaatccctt tcttaagtac tctggggccc tgcanttat 999

<210> 153
<211> 1212

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (794)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1047)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1146)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1176)
<223> n equals a,t,g, or c

<400> 153
cacgcccacc tctctcctgg agcgctgggc cttcgctggc cgcaccggca gccatgagct 60
cggagatgga gccgctgctc tgggcctgga gctattttag gcgcaggaag ttccagctct 120
ggccgatcta tgcacgcaga tgctggagaa gtccccttat gaccaggcgg ctgctgcaga 180
tgggcattta taacggccag ctttttaaca atctggggct gtgttgcttc tatgcccagc 240
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tggcccatca gtgcttcagg ctggctctgg tcaacaacaa caaccacgcc gaggcctaca 420
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aaactgcatc atcattagca ccccatatgt atgaaccgca ttttaatttt gcaacaatct 540
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gcactatgtc tgtgtatgta tgtatatagt gtaatacgta tattttaaca aacctgtcct 780
tgatattagt taanggtgac acataagggt gacacagaat gtgtaatgca aatttcatag 840
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cctgaaactg tctctcacat tatatagtag atgtttgttt ataatgttta caaaacattt 960
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gccatcatgt agcttaagga gtctggnaat ctggccattg aaaactggca cctttgaagc 1080
caggtgtggt tagcatgtgc ctatagtccc agcttacttg gggaggtggg aggtggggag 1140
ggattnatga aattaggagg acttttccct ttaagnactt ttaaaaaaat ggtattttga 1200
aaacctattt tt 1212

<210> 154
<211> 2361
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (92)
<223> n equals a,t,g, or c

<400> 154
ggagccttgc cttgctgctc tacctccacc atgccaagtg gtcccaggct gcacccatgg 60
cagaaggagg agggcagaat catcacgaag gntgaagttc atggatgtct atcagcgcat 120
actgccatcc aatcgagacc ctggtggaca tcttccagga gtaccctgat gagatcgagt 180
acatcttcaa gccatcctgt gtgcccctga tgcgatgcgg gggctgctgc aatgacgagg 240
gcctggagtg tgtgcccact gaggagtcca acatcaccat gcagattatg cggatcaaac 300
ctcaccaagg ccagcacata ggagagatga gcttcctaca gcacaacaaa tgtgaatgca 360
gaccaaagaa agatagagca agacaagaaa aatgtgacaa gccgaggcgg tgagccgkgc 420
aggaggaagg agcctccctc agggtttcgg gaaccagatc tctcaccagg aaagactgat 480
acagaacgat cgatacagaa accacgctgc cgccaccaca ccatcaccat cgacagaaca 540
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gcagtttttc gagatattcc gtagtacata tttattttta aacaacgaca aagaaataca 2280
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aaaaaaaaaa aaaaaggggg g 2361

<210> 155
<211> 1831
<212> DNA
<213> Homo sapiens

<400> 155
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gaaaccagtg taggaaagga gacgccacca gacatcttca acagacaaga ttctttctgc 120
ctttttcaaa agatgctctc tgcagcagta agactataga tagagttgat tggaatatca 180
tgtgacccag tatgctactg ctaggcataa ttatcaaaaa ttcatttttc tcattaaata 240
ttgttaattg ctcgccacat aaagagaagc tagagctcac cagtcttggt ggtgtcctag 300
accttcctct aaagcagtct tgggaagctg gatcatcagw tctttagcct agacagagtg 360
tcgctggtaa ataaaggaga cacaggtaac ccagagtgga cagtgatttg cgtggggagw 420
cacagtggat ctggggcctc tgatactttg yttcckaaaa cagcccccag ttttcggctt 480
gcctatgaga tgatgttcat gtgcttcctt gaaaccaggt ggaaagaaag gggaagaatt 540
aattttctca ttctgttgct gttgaacgta atgtaatctt aatactgtag ccttcctaga 600
agcccttccc tctttttcat gctgtaaagt caaatatttg atatccttaa cataaatttt 660
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<210> 156
<211> 1186
<212> DNA
<213> Homo sapiens

<220>
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<222> (1045)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1078)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (1118)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1134)
<223> n equals a,t,g, or c

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<210> 157
<211> 1448
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (456)
<223> n equals a,t,g, or c

<400> 157
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ctgaactgga tgatacgaat gatgtcagat ttggaatcta acatcgtggc tgtggagagg 120
gtcaaggagt actccaagac agagacagag gcgccctggg tggtggaagg cagccgccct 180
cccgaaggtt ggcccccacg tggggaggtg gagttccgga attattctgt gcgctaccgg 240
ccgggcctag acctggtgct gagagacctg agtctgcatg tgcacggtgg cgaraaggtg 300
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catgacctgc gctctcagct gaccatcatc ccgcangacc ccatcctgtt ctcggggacc 480
ctgcgcatga acctggaccc cttcggcagc tactcagagg aggacatttg gtgggctttg 540
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aaaaaaaa 1448

<210> 158
<211> 1004
<212> DNA
<213> Homo sapiens

<400> 158
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cttcctacat aaattaataa agtctgtcta tatttaaggt ttctgggagt agttttgtct 180
atatttaatc catagatgtg ctcctagtca tcagtcttat ttcagtaaaa ccatctttct 240
ggccaaatct ctaacacgtt ttttacttca gtagtgaggg caatgagaag ctttattaag 300
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ttgaggatat aaagaggatg tgcactgagc tgtgctgatg ttcagcattt attatacttt 420
aatgggatag tgcttcttga ccattataga acaacaaact gtcaaagggt taatacagat 480
gacccagacc tgacattaaa tcctcttgat tagaaataat taaatgaatt atttattcat 540
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tttgtttttc actttaggta tctcttaggc aaatagagat ataaattgta ataggaaaca 660
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<210> 159
<211> 1509
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1420)
<223> n equals a,t,g, or c

<400> 159

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agcgtgcgtg cggctaagag agtgggcgct ctcgcggccg ctgacgatgg aagaactgga 120
gcaaggcctg ttgatgcagc catgggcgtg gctacagctt gcagagaact ccctcttggc 180
caaggttttt atcaccaagc agggctatgc cttgttggtt tcagatcttc aacaggtgtg 240
gcatgaacag gtggacacta gtgtggtcag ccagcgagcc aaggagctga acaagcggct 300
cactgctcct cctgcagctt tcctctgtca tttggataat ctccttcgcc cattgttgaa 360
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tctacgggtg cgaagtgagc tctctggcct ccccttctat tggaatttcc actgcatgct 480
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tgtggaactt catgaaccca atttcacttt ccttcactgg gttcccaccc cattgttgtc 1500
tctgggatg 1509

<210> 160
<211> 2160
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (470)
<223> n equals a,t,g, or c

<400> 160
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tttgaaagca ctgcaaataa gaaatcctcc tcctcttcct caggaacccc tgcatctcag 120
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<210> 161
<211> 3609
<212> DNA
<213> Homo sapiens

<400> 161
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aaaaaaaaa 3609

<210> 162
<211> 1603
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1600)
<223> n equals a,t,g, or c

<400> 162
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tgcgctacaa agtgggagac caggaggaga agaccaaaga ctttgccatg gaggactgag 120
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catttccagt acgactttag tatctctcca gagccatatt ttctcagtcc gaattaattc 600
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aatggacttt gtaattgtac agcataccta agaaactcag aaggtgcatt taagagagag 840
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aggtttctga gcctagccca agggcttatt catcaccatg ggtaaattat ttaaactcac 1020
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catttggagg gatcatgtga gttggcctac ttacaagtag tgaaagttcc cttttcagtt 1140
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cgagcttctg tatgctaaga aaataggtgt gaaaaactgg tgttctgaaa tagcctaaca 1500
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aaaaactaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaan ccc 1603

<210> 163
<211> 853
<212> DNA
<213> Homo sapiens

<400> 163
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tatttataaa gtgttgaata tctcatatag tttattgaat acctgcatcc aaaagatgct 180
ggcaacacag cacactttag agcattggtt gtttactctc ttgatggtat ggctgcccag 240
catcaagagt tatcatactg caaatcgata gcccaggaaa agagcaaaat tcaaagttca 300
aagtagagtt tttactgaat gcttgctttt gcaccgtcgt aaagttgaaa agaatttaaa 360
ttgaaccatc ataagctgca gactgtgcat tttatattga aaagttaata tttttaattt 420
ttaatgcaga gaagtaccca aagcataaga acacaacaca ttttcacaaa gcaaacacag 480
ccatggaacc agcacccata tcaactaaca aaatactagt ttgggctttt ttgtacttta 540
tacaaatgga ctcatataat gttcatcttt tgggtctgcc tgctttcatt caatattagg 600
tttgtgggtt catctctgct gtgtgtagtt ctttcctgtt ctttatacag tgttccaaag 660
tatagtatat tacagtttac ccattctact cttgatagta aatgttttca catttgggct 720
attacaaata gtgctgcagt gaacattcac atacacatct tttggtgaac atgtgttaca 780
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ttacacctct acg 853

<210> 164
<211> 1917
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1433)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1856)
<223> n equals a,t,g, or c

<400> 164
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aacagctcca agacaacatt aattccagct atacgagaag tttcttcaca ggtataagat 120
gatctctgaa ttcacctggc ccaaccatga ccttccttca gacaaagagg ctgtcaagaa 180
actaattgaa cggtgtggtt ttcaggatga tgtagcttat gggaagacca aaattttcat 240
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tgtcctcttt ctacaaaasg tgtggcgggg caccckggcc cgcatgcggt acaaaagaac 360
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acagcccatc cagcagagtg agtccatcct tcccaggttc tcccctggga gactcncttt 1860
gccaccaagg cccccaccag ggctctgacc accgctctgg agaggacagt gtggcat 1917

<210> 165
<211> 2420

<212> DNA
<213> Homo sapiens

<400> 165
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gaaaacataa attttcctgc tgaagaagag aaaatcttgg agttttggac tgaatttaat 180
tgttttcagg aatgcttaaa gcaatcaaaa cataaaccaa aatttacctt ctatgatggt 240
cctccttttg caactggact gcctcactat ggacatatac ttgcgggtac aattaaagat 300
atagttacaa gatatgctca ccagagtggg tttcatgttg acagaagatt tggatgggat 360
tgccatggct tacctgtgga atatgaaatt gataagacac tgggaatcag aggaccagag 420
gatgtggcca aaatggggat tacagagtat aacaatcagt gccgagcaat tgtgatgaga 480
tattctgctg agtggaagtc tactgttagc agacttggcc gatggattga ctttgacaat 540
gactataaaa ctctgtatcc acaattcatg gaatcagtct ggtgggtctt caaacaactc 600
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aagaagtaca ggcccctgtt tgactatttc ctgaagtgta aagagaatgg cgctttcact 1020
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atctttgttt aagacctggg 2420

<210> 166
<211> 2061
<212> DNA
<213> Homo sapiens

<400> 166
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cttctcgcgc acggcccggg acaaccggct cggctgcatg ttcgtgcgct gcgcgccctc 180
cagccgctac acgctgctct tctcgcacgg caacgccgtg gacctgggcc agatgtgcag 240
cttctacatt ggcctcggct cccgcatcaa ctgcaacatc ttctcctacg actactcggg 300
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tggmaggcgc tgcgcacccg gtatggcgtg agtcccgaga acattatcct ctatggtcag 420
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gctttgatgc tttccccagc attgacaaga tatctaaagt cacctctcct gtgttggtca 600
ttcatggtac agaggatgag gtcatcgatt tctcccatgg cctagcgatg tacgagcgct 660
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gacaacaact tgatcttacc tcatttactg tgaacagaag agtcctctgt tttgcacatg 840
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tggatgcggc acagtggttg gtaatggaat aaaggatgca tggatcagaa aaaaaaaaaa 2040
aaaaaaaaaa aaaaaaaaaa a 2061

<210> 167
<211> 2567
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (55)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (74)
<223> n equals a,t,g, or c

<400> 167
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acagccgggc gcancggcgg yacaggggcc cccgccggcg cctcagctca cagagacgct 120
gggcttctac gagagcgacc ggcggcggga gaggcgscgg gccgcacaga gctttcattg 180
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tatacagaaa gaagagaaag agtatacact tgtttgcgaa taccaagaga attggaaaag 300
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cctttaagag ttttcctggc actattcagg ctcctcactt tgccttgcta tggcttaagg 420
gacagacgtt tgcttcagcc tgcccaggtg tgtgacattt tgaagggtgt cattttggta 480
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agaaaaagag cccacattgg ggtgattcct cactttttca tggctgttct ctatgtcttt 720
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ttaactttaa ggtatactta actgattttg ctttaaaact aattacytcc mtaaattatt 2520
acmgctaaag ggttycgrtg ttggarccgg gcyggaaaat tgtccat 2567

<210> 168
<211> 2324
<212> DNA
<213> Homo sapiens

<400> 168
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cggcgatcgc aagcaggctc ttctaagttc ccgacgcctc ttggcccgga aaactccggg 120
aaccccacac tgctttcctc tgcccagccc gagactcggg tcagttactg gacgaaactg 180
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agagccctga agggacggga gaaaccagcc gcccccacag cgcagaaatc tttgagttcg 360
ctgcagctcg actcctcaga cccctcggtc accagtcccc ttgattggct agaggagggg 420
atccactggc aatactcgcc cccagaccta aaattggagc ttaaggccaa gggaagtgct 480
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<210> 169
<211> 1784
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (200)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (215)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1759)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1778)
<223> n equals a,t,g, or c

<400> 169
gagaattacc ttcagctgta tcaattacag tacacaggaa ttgttacgat ttcctaaact 60
tcatgatgcc atagttgaag tggtgacttg tcttcttcgt aaaaggttgc ctgttacaaa 120
tgaaatggtc cataacttag tggcaattga actggcttat atcaacacaa aacatccaga 180
ctttgctgat gcttgtgggn taatgaacaa taatntagag gaacaaagga gaaacaggct 240
agccagagaa ttaccttcag ctgtatcacg agacaaggtt gcatctggag gtggtggggt 300
tggagatggt gttcaagaac caaccacagg caactggaga ggaatgctga aaacttcaaa 360
agctgaagag ttattagcag aagaaaaatc aaaacccatt ccaattatgc cagccagtcc 420
acaaaaaggt catgccgtga acctgctaga tgtgccagtt cctgttgcac gaaaactatc 480
tgctcgggaa cagcgagatt gtgaggttat tgaacgactc attaaatcat attttctcat 540
tgtcagaaag aatattcaag acagtgtgcc aaaggcagta atgcattttt tggttaatca 600
tgtgaaagac actcttcaga gtgagctagt aggccagctg tataaatcat ccttattgga 660
tgatcttctg acagaatctg aggacatggc acagcgcagg aaagaagcag ctgatatgct 720
aaaggcatta caaggagcca gtcaaattat tgctgaaatc cgggagactc atctttggtg 780
aagagaacta tgtaatactg agactttgtt gactcaaaac ttgctagtta ctgcctacct 840
gagtagaatc ttatttatga actcctgtgt attgcaatgg tatgaatctg ctcatgtgga 900
gactggctat aaactgaaaa gtgtattcca aattgcagaa cacatcacac atttaatcca 960
aataataaat ggctgtttct aaagtttccc agtatatata aaatacatca agtctgtctt 1020
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agtttgcctg tggataagat gacctgtgta ataatctttg ttagtagtct taaagctgct 1140
gccatagtcc tccaagaaga aagcaccaag acaacatttc atatgactat aatgcatgta 1200
ctatataagc tgatctggct ttgaaagatg tgagttggca agttcctcac atagagtcat 1260
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tcagaaaatc aaatgatgac ctaaatttcc cttaatttgc aaatacagta gtaattaagg 1620
tacatctcta aagtggagca cttacaccag gctctaagat tcactttgag gtggaactta 1680
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caacmaaata tatttrttna gratagtatg aaagtcangg gagg 1784

<210> 170
<211> 1296
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1261)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1276)
<223> n equals a,t,g, or c

<400> 170
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cggcggagga agagggcgag cctgaggtga aaaagcggcg acttctgtgt gtggagtttg 120
cctcggtcgc aagctgcgat gccgcagtgg ctcagtgctt cctggccgag aacgactggg 180
agatggaaag ggctctgaac tcctacttcg agcctccggt ggaggagagc gccttggaac 240
gccgacctga aaccatctct gagcccaaga cctatgttga cctaaccaat gaagaaacaa 300
ctgattccac cacttctaaa atcagcccat ctgaagatac tcagcaagaa aatggcagca 360
tgttctctct cattacctgg aatattgatg gattagatct aaacaatctg tcagagaggg 420
ctcgaggggt gtgttcctac ttagctttgt acagcccaga tgtgatattt ctacaggaag 480
ttattccccc atattatagc tacctaaaga agagatcaag taattatgag attattacag 540
gtcatgaaga aggakatttc acagctataa tgttgaagaa atcaagagtg aaattaaaaa 600
gccaagagat tattcctttt ccaagtacca aaatgatgag aaacctttta tgtgtgcatg 660
tgaaygtgtc aggaaatgag ctttgcctta tgacatccca tttggagagc accagagggc 720
atgctgcgga acgaatgaat cagttaaaaa tggttttaaa gaaaatgcaa gaggctccag 780
agtcagctac agttatattt gcaggagata caaatctaag ggatcgagag gttaccagat 840
gtggtggttt acccaacaac attgtggatg tctgggagtt tttgggyaaa cctaaacatt 900
gccagtatac atgggataca caaatgaact ctaatcttgg aataactgct gcttgtaaac 960
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gtttggacct tcttggatta gaaaaactgg actgtggtag atttcctagt gatcactggg 1080
gtcttctgtg caacttagat ataatattgt aaaatgcttt tcaagtgtgg gttttgccct 1140
gattgttgca aatacaattt ccaccttctg gaaaggtagg tttgctgtgg aggaaataat 1200
gwactagatc attgtcacag aaaaaccaac tatgatttat ggkkgtgttt tcmccaryat 1260
nagacggaaa gacccncccc ttcttccccc cccct 1296

<210> 171
<211> 1897
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (952)
<223> n equals a,t,g, or c

<400> 171

gagaaaactg acttcgagga attctttcta aggtgtcaga tgcctgatac attcaattca 60
tggtttctta taaccctact ccacgtctgg atgtgtctag tccgaatgaa gcaggaaggc 120
cggagtggga agtacatgtg tcgtatcata gttcatttta tgtgggagga tgttcagcag 180
cgcgcagagt catgggggtt aatccctata tcctgaagaa gaacatgatc ctcatgacaa 240
atcatttcta tgcagcgatc ttgggatatg atgaggggat cctttcagat gatcatgggc 300
tggccgctgc cctctggaga accttcttca accggaaatg tgaagaccct cgacatcttg 360
aattgctggt agagtatgtg aggaaacaga tacagtacct ggactccatg aacggggagg 420
atctgcttct gacaggggag gtgagctggc gccctctagt ggagaagaat cctcagagca 480
tcctgaagcc ccattctccg acttacaacg acgaggact ttgatgggct gggcctccgc 540
acggcccgcc agctggcttc gaggaacctc caggagagaa gtgcctgttg gtccaggacc 600
ctgcagaaag tggcctgaac tgacctctga acagcatctg tcaaatacct ggccccattt 660
gtgttgagtt tcctcttagt gtgcccagga gtctgatctg ctggggtaca gggctgggag 720
aacccctagc tctcccgggg tgtcctctcc cttaggggaa gccccgagtg agagtccccc 780
agcacacact ccccaacccc ctccagcaac tacatgtgac tgatagcttt tcccaaaggc 840
caaggaaggg atggtgtagg ttcaaaaggg aaacccccca gggcctgctg tggcctagga 900
gcagattgta atgctgccga gtccggtcgg tgaccacgcg ttgtccctcg gntttcagcc 960
atggggttga gttggccatt aaaagaaaca gagacttctc tctgccatgg cccttcttta 1020
ttccagggac ttagaaactt gcctgagatg gtggacgcag taatgagggc accgcgcast 1080
cagttagaga cggagaaagg gaagaggctg ggatggtctc tgctgctctt gcctctagtt 1140
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gaacaaagtc acctttgtca ctcccagtga actgaatgag gaacatgctg tctcctgtct 1320
tggcctcccc tttcatgaga tactggggag aagagaacat tcctcctggc ttagttgtag 1380
cagacccaga cctgtgccca gctttggtcc cccttcccaa cttctgaagc acgtgctgca 1440
gagccacctt ggtctgagca cctgaggacc agcccctcct ccctcagtgc gggtcatctc 1500
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gtgaggtata tcccacttct gtgaaaacat tacaaatcaa accgcttctc tcagtttatt 1680
taagatgctt ttgttgcgag cggagctcta gagtgaagcc tcctgtgtgt gtgtgagata 1740
ataacacctt gtaactcatt acagctgggc actatttaca taaaccagag ctgagccagg 1800
caggaatttg ctgattaatt tatttttaat ggagtgaagt ataccatgca ccaaaataaa 1860
ctttactgtg tgtacctaaa aaaaaaaaaa aaaaaaa 1897

<210> 172
<211> 1723
<212> DNA
<213> Homo sapiens

<400> 172
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ctcccccggg ccgcccccga gcacgaagtt ggcgggagcc tataaaagct ggtgccggcg 120
cgacccgsgg acacacagtg caggcgccca agccgccgcc gccagatcgg tgccgattcc 180
tgccctgccc cgaccgccag cgcgaccatg tcccatcact gggggtacgg caaacacaac 240
ggacctgagc actggcataa ggacttcccc attgccaagg gagagcgcca gtcccctgtt 300
gacatcgaca ctcatacagc caagtatgac ccttccctga agcccctgtc tgtttcctat 360
gatcaagcaa cttccctgag gatcctcaac aatggtcatg ctttcaacgt ggagtttgat 420
gactctcagg acaaagcagt gctcaaggga ggacccctgg atggcactta cagattgatt 480
cagtttcact ttcactgggg ttcacttgat ggacaaggtt cagagcatac tgtggataaa 540
aagaaatatg ctgcagaact tcacttggtt cactggaaca ccaaatatgg ggattttggg 600
aaagctgtgc agcaacctga tggactggcc gttctaggta tttttttgaa ggttggcagc 660
gctaaaccgg gccttcagaa agttgttgat gtgctggatt ccattaaaac aaagggcaag 720

agtgctgact tcactaactt cgatcctcgt ggcctccttc ctgaatccct ggattactgg 780
acctacccag gctcactgac cacccctcct cttctggaat gtgtgacctg gattgtgctc 840
aaggaaccca tcagcgtcag cagcgagcag gtgttgaaat tccgtaaact taacttcaat 900
ggggagggtg aacccgaaga actgatggtg gacaactggc gcccagctca gccactgaag 960
aacaggcaaa tcaaagcttc cttcaaataa gatggtccca tagtctgtat ccaaataatg 1020
aatcttcggg tgtttccctt tagctaagca cagatctacc ttggtgattt ggaccctggt 1080
tgctttgtgt ctagttttct agacccttca tctcttactt gatagactta ctaataaaat 1140
gtgaagacta gaccaattgt catgcttgac acaactgctg tggctggttg gtgctttgtt 1200
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gactttgttc acagcatgta gggtgatgag cactcacaat tgttgactaa aatgctgctt 1320
ttaaaacata ggaaagtaga atggttgagt gcaaatccat agcacaagat aaattgagct 1380
agttaaggca aatcaggtaa aatagtcatg attctatgta atgtaaacca gaaaaaataa 1440
atgttcatga tttcaagatg ttatattaaa gaaaaacttt aaaaattatt atatatttat 1500
agcaaagtta tcttaaatat gaattctgtt gtaatttaat gacttttgaa ttacagagat 1560
ataaatgaag tattatctgt aaaaattgtt ataattagag ttgtgataca gagtatattt 1620
ccattcagac aatatatcat aacttaataa atattgtatt ttagatatat tctctaataa 1680
aattcagaat tctaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa 1723

<210> 173
<211> 1416
<212> DNA
<213> Homo sapiens

<400> 173
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actcttcttg aatattttca cagatgattg tgattgcttt aaatgacctc tgtggcaatt 120
taaattagat ggatttaatc tcagtaatgt gctggtcgca taaatgtcat gttttaatag 180
gaaaagttac ttgtaaatct ttagaccttt gttgtcactt aggctgggga gtcactaccc 240
tatttggcat cttactagtt ggggggacct tttccgtgta cagtgatggg acttttgtga 300
cctttactct cactatgcaa tagagggttt catgtagtta atctgacatg tcaaaattgg 360
gaagactgta accttttttt ttttttttta agatttctct tttttgtgtc cctcaatact 420
tagcagatgt tcatttggtg gaaattctta ttacttacat gaatgagttt gaatttagtg 480
gcaaggaaga aaaaaaaaac tcaaattatt gttttaaaag aagaaaactt gcaaagtaca 540
taagtatttt ttaaaaatca atcgaacaga aaggaatgca tgctgttttt caatggctta 600
gacatgcttt ttattcactg actagtattc actttttac aacttgtatc aaaacaaatg 660
atctttgttt ttgtcacagg caaaaacagg ttgacactgg tgggttggct ttattaatta 720
attttttttc tattaggttt tctttaataa tgttaaattt ctaaattata gcatatgttt 780
tagttaattc tgaaatcagt tacttcattt gttaatttat ccctcatatc atgaatattg 840
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tatattctaa acttgaaaat gtggtatcaa tcaataatag aagtatcact ggaggattta 960
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aggagatagt ccactgtgct tatgtttttt tgtttaattt ctatattctg aagcagtgca 1140
gatatagggt atgctaatca agtgagcaag gtggaacatg tacaatataa ggagaagctg 1200
taaaaatcac agtataaaat tatgaagttt ggtaactgta aaatgtactg tatttatatg 1260
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tttcctatat ttttaatgtg tatgatgaaa ttaatttttc ttgaatatta aagtctgcca 1380
attgctatga aamaaaaaaa aaaaaaaaaa actcga 1416

<210> 174
<211> 1956

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<400> 174
nctnantaag ggaacaaagc tggngctcca ccgcggtgcc gaccgctcta gaactagtgg 60
atcccccggg ctgcaggaat tcggcacgag gatcaaccgg atttttagga tatgcaatct 120
aacaagacca caggaaggtt atctgatggt gcaacagttt cagtacctag gatgggcttc 180
tcatcgagaa gtgcctggtt ccaaaaggtc attcttgaaa ctgatacttc aggtggaaaa 240
gtggcaggag gaatgcgagg aaggggaagg ccggacgatt atccactgcc taaatggtgg 300
cgggcgaagt ggcatgttct gtgctatagg catcgttgtt gaaatggtga aacgggcaaa 360
atgttgtcga tgttttccat gcagtaaagr cactgaggga acagcaagcc aaacatggtg 420
ggaagccccg gagcaatacc gtttctgcta tgatgtagct ttggagtacc tgggaatcat 480
cttagttggg tgagactctt taaagtgcat ccatgaagra acctgtccat ctattgagcc 540
agcagctgtt gtacctgtta cacttgtgca gaaagatttt aatgtggggg gtgggagact 600
tttacatttg agaggtaaaa gtattttttt tatgaagttg tgtatcttaa taaaaaggac 660
tgaattagtt tttattacta tattaaagca tcaacatttc atgccacata aattatattt 720
aataagaacc agattgaaat gagaacgtat tggtgtttgt acagtgaaca tgccaccttt 780
tttctcatgg tttcagtaga gcagctacca catgttgcat gagttcatac tttctacgtg 840
gcatttttct ccctttctaa aatgaaagct gatgaatctt aaaaggaaga agaaaagaaa 900
agctgtgcaa attcatagta aagttcgttt tttatatgtt tccagtgtag cagatctcta 960
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gttgaacata gcctttaagc atcatttaaa ttttaaagga atggagtttt tcagcctgtg 1560
gcccagcact ggtcaagaaa acaagatggc aacatatatg ctttcagggt caaatttgag 1620

caaactgtaa actgtcaggg tgataaaatg tttctcttga tgtttacatg cacaagcttt 1680
gcgttctgac tataaaaagt gtgaacaaat caatgccaga ttcctgtttt gcgcattgtc 1740
atgggattct taagtgaacc tttctaaatg tggtcttgtt cacatgctcc acgtagctgt 1800
aacttcacat catcagcttg cagtttgtaa ttgactaaag cattccagtg tcctctttct 1860
agattgccag ctcatgacat ggtgcttata aagatttaat taaagtaaga atgaaataaa 1920
gtttttataa ttataaaaaa aaaaaaaaaa aaactc 1956

<210> 175
<211> 1689
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1688)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1689)
<223> n equals a,t,g, or c

<400> 175
ggctgcaggt cgacactagt ggatccaaag aattcggcas akctcttatt cctcactttc 60
cacccccgta ttttgtaatg accatgagca atgtttttac tttttgtata atggggtggg 120
gtggagtggg ggcttctgag agtcagcctg aggtctttag aggaccagct attgtagcac 180
cttggatact tgaagtttaa tgctcagttg ggtcgggtgg cagttgactt ggtggctggc 240
atgttcagca gtgcctgggg ccctgtttct gggcagcctt tgaggatttt ctatgatatt 300
gaatgacagt tttaagtggc aactcaggcc cagctcatgc ccttttttgc ctggacatgt 360
gctattttta ttcacttata tatcaattac ttgtaagggt taaactttca aacaggaagt 420
atattgggac aaaagggctc ttggggatta gatatccctt taatctgtga ccattgggca 480
aaaaatttc ctgcagcaaa agtctgaggc tgttgggacc atttttgcag ctttaatcct 540
tagcctcttt tgactgtata tttgtgttta aaatgcagag ctcaactgaa tatttccttt 600
tttgttttgt tttgttttgt tttaagaagt aggttgtttt cctgaaccgt aaacttgtat 660
cattttaact tgcacaaagg aagtctgttc ttggtattgc tcttgcactt gggttttttg 720
ttattgtttt gtgtggattt tttaaagctt ttctgttcac cctcctgcca ggaaaatccc 780
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tagggtcaga atcgtggaga gaatactcag aaatgaacct ctttaaagcc ttgcaggaat 900
gagtcactct tacttaatga aatgttaaag ccaattaaaa agcatgctgt gatgcccagc 960
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gttgttctaa acccccgacg cataaagtgt agaggaggga tggccaaggg tgggtggtag 1140
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tgtatattga tgaatgagat cttacctatt aaatatatta ttggattatg gttcctgaag 1440
gtcattagag tgtgtgtgtg tgtgtgtgtg tgtgtgtgtg ttttatgact taaatatctt 1500
tacgtgtgtt ttttagagct tggttcttta aagatttgga gaagatatgt aaattaccaa 1560
ggcacttggt ttttctgttt tatatactaa taatcagggc ctaagttaaa taaaaatatg 1620
tgtgcatgta ttttaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1680

aaaaaaann 1689

<210> 176
<211> 1016
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (895)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (928)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (970)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (992)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1001)
<223> n equals a,t,g, or c

<400> 176
taagagagct ttgcaaaaaa aaaaagaaaa aagaaaaaaa aaaaaccacg tttctttgtt 60
gagctgtgtc ttgaaggcaa aagaaaaaaa atttctacag tagtctttct tgtttctagt 120
tgagctgcgt gcgtgaatgc ttattttctt ttgtttatga taatttcact taactttaaa 180
gacatatttg cacaaaacct ttgtttaaag atctgcaata ttatatatat aaatatatat 240
aagataagag aaactgtatg tgcgagggca ggagtatttt tgtattagaa gaggcctatt 300
aaaaaaaaaa gttgttttct gaactagaag aggaaaaaaa tggcaatttt tgagtgccaa 360
gtcagaaagt gtgtattacc ttgtaaagaa aaaaattaca aagcaggggt ttagagttat 420
ttatataaat gttgagattt tgcactattt tttaatataa atatgtcagt gcttgcttga 480
tggaaacttc tcttgtgtct gttgagactt taagggagaa atgtcggaat ttcagagtcg 540
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caccacgtta tatattccct accgaaggag acaccttttc ccccctgacc cagaacagcc 720
tttaaatcac aagcaaaata ggaaagttaa ccacggaggc accgagttcc aggtagtggt 780
tttgcctttc ccaaaaatga aaataaactg ttaccgaagg aattagtttt tcctcttctt 840
ttttccaact gtgaaggtcc ccgtggggtg gagcatggtg cccctcacaa gccgnacggc 900
tggtgcccgg gctaccaggg acatgccnga gggctcgatg acttgtctct gcagggcgct 960
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<210> 177
<211> 1364
<212> DNA
<213> Homo sapiens

<400> 177
gaatcccact cccttctccc acttgttaat tagttacata ctttttgta attgtttatt 60
tggttgctgt ctccctctca agaatgcagg gaccatgtct gcattctgca gtaatcacta 120
ctgcacaccc agaatctatt acagatcctg gcatgtagct gatgcataaa tatttgttga 180
atgaaagtct gtacattgta tttatgctat tggtattgct atgacctgaa actaaaagga 240
gttgtggaaa agatttctta tggaacagaa atatcccttt tgattaatat cacaatctcg 300
taaattgaga aaacaaawaa tatatactac tggagcattc atgtatagtt ggagattatg 360
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ctgtattgaa ataacgaaaa gcagtcacat tttaataata gaagcttcct agcttactct 480
ttctgtaatc ttcttttcct aaatgtaaga gagcctcata attatgaggc ttattactag 540
agtaaggctg tcaaaggcag caaaatgtct ttctgtttgg aagaataaca taaacttgac 600
atgtatggtg ggggacagaa ggtttcaaaa gtttaagaat ctgtgttgtc ttaacaaata 660
gatgcttctc aaggasstta cgytagtggt tactctgtcc agtcagggtt ttttcttctt 720
taacttgggt tcatttcctg atggcacaca tgaagtttgg atcatatggt ttgactttag 780
ctatggtcct tagctatggg gagcagcatc agcgacctgt gacatgtaaa ttaaaaatac 840
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gatgttccag gttagtctga ttaacaccct tggttaagaa ccattgggag gatctgattg 960
ccagtttaag gggaccttca agcctgtagg tctttatagt taaaaaaaaa aaaagatttt 1020
aaaaatcatg catatgttgt ggctgaawtc tggtttagca catactgctt ttaatggcct 1080
gaaatgtttt tcccaaataa attstcttgt tatagctttc atgtgtgatt tggtccagct 1140
tcttgttttg aagatactta cgggggggaa cactttgtga tttctcttag taacatatta 1200
acccacttaa aaacccttc tattacaggt cttcacattt aggcttaatg tgcttaattc 1260
aaatgtaaaa atacacctgc ctttgttctc agtgaaagta tgtaataaat aaatgagggg 1320
ttggcaaact actgcccacc atctgttttt ttatggccta tgaa 1364

<210> 178
<211> 740
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (38)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (171)
<223> n equals a,t,g, or c

<400> 178
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cggggtttca ccatgttggc caggctggtc ttgaacttct ggccccaagt catctgcctg 120
cctcagcctc ccaaggtgct gggattacaa gtgtgagcca ctgtgtacag nctttgtgtt 180
aacttacttt gaattagccc cttattccaa agctgcctcc tgaaaggasg cttcctaaaa 240
ggtgttgctt tggggtaaat aagaggtgct ggtgaagtga gactagcttg cgcatctctc 300

tgccatgaag gaaactagct ccgcagacgt tttactaacc acagcagacc ccctccttga 360
ggaacccaga agggcagaga gcatcagatg aaatcaactg ctgagagagg gaagtgagtg 420
ctgtgttggc accgctgcca gaaactcttg agaatgagca tcgtgtgcca cttatccact 480
gcttgccgac ttcagtagca agagcctcca gaatgctcat ggataaacat catctttgtg 540
gccacacatt gttttatgag ctgagtcatc agactggctg gctccttaaa tgctgctgtg 600
tgattctcta ggcagcagaa aacaaggaga gaagatatga agtgtatctc atcgagcttt 660
gtagagggcc agtatcgatt caccaaaggt gatgggggat ttaccattat ggagtttgct 720
tgtgataaaa aattattgat 740

<210> 179
<211> 1410
<212> DNA
<213> Homo sapiens

<400> 179
gaaaatgtat ataataggca aggaaagaaa tacagtactg tttctggacc cttataaaat 60
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tacaactcac attagagaac atcctggctt ttgagcactt ttcaaacaat caagttgact 180
cacgtgggtc ctgaggcctg cagcacgtcg gatgctaccc cactatgaca gaggattgtg 240
gtcacaactt gatggctgcg aagacctacc ctccgttttt ctactagata ggaggatggt 300
agaagtttgg ctgctgtcat aacatccaga gcyttgtcgt atttggcaca cagcagaggc 360
ccagatatta gaaaggctct attccaataa actatgagga ctgccttatg gatgatttaa 420
gtgtctcact aaagcatgaa atgtgaattt ttattgttgt acatacgatt taaggtattt 480
aaagtatttt cttctctgtg agaaggttta ttgttaatac aaggtataat aaaattatcg 540
caacccctct ccttccagta taaccagctg aagttgcaga tgttagatat ttttcataaa 600
caagttcgag tcaaagttga aaattcatag taagattgat atctataaaa tagatataaa 660
tttttaagag aaagaattta gtattatcaa agggataaag aaaaaaatac tatttaagat 720
gtgaaaatta cagtccaaaa tactgttctt tccaggctat gtataaaata catagtgaaa 780
attgtttagt gatattacat ttatttatcc agaaaactgt gatttcagga gaacctaaca 840
tgctggtgaa tattttcaac tttttccctc actaattggt acttttaaaa acataacata 900
aattttttga agtctttaat aaataaccca taattgaagt gtataatata aaaaatttta 960
aaaatctaag cagcttattg tttctctgaa agtgtgtgta gttttacttt cctaaggaat 1020
taccaagaat atcctttaaa atttaaaagg atggcaagtt gcatcagaaa gctttatttt 1080
gagatgtaaa aagattccca aacgtggtta cattagccat tcatgtatgt cagaagtgca 1140
gaattggggc acttaatggt caccttgtaa cagttttgtg taactcccag tgatgctgta 1200
cacatatttg aagggtcttt ctcaaagaaa tattaagcat gttttgttgc tcagtgtttt 1260
tgtgaattgc ttggttgtaa ttaaattctg agcctgatat tgatatggtt ttaagaagca 1320
gttgtaccaa gtgaaattat tttggagatt ataataaata tatacattca aaaaaaaaaa 1380
aaaaaaaaaa aaaaaaaaaa aaraaaaaaa 1410

<210> 180
<211> 1493
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1328)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (1352)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1376)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1406)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1436)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1484)
<223> n equals a,t,g, or c

<400> 180
ggccaaatct tcccgggctg ctgtggcaa caagatgttt gtcaagggtg cccctgaggg 60
cgtcatcgac cgctgtaact atgtgcgagt tggcaccacc cgggtgccac tgacggggcc 120
ggtgaaggaa aagatcatgg cggtgatcaa ggagtggggc actggccggg acaccctgcg 180
ctgcttggcc ctggccaccc gggacacccc cccgaagcga gaggaaatgg tcctggatga 240
ctctgccagg ttcctggagt atgagacgga cctgacattc gtgggtgtag tgggcatgct 300
ggaccctccg cgcaaggagg tcacgggctc catccagctg tgccgtgacg ccgggatccg 360
ggtgatcatg atcactgggg acaacaaggg cacagccatt gccatctgcc ggcgaattgg 420
catctttggg gagaacgagg aggtggccga tcgcgcctac acgggccgag agttcgacga 480
cctgcccctg gctgaacagc gggaagcctg ccgacgtgcc tgctgcttcg cccgtgtgga 540
gccctcgcac aagtccaaga ttgtggagta cctgcagtcc tacgatgaga tcacagccat 600
gacaggtgat ggcgtcaatg acgcccctgc cctgaagaag ctgagattgg cattgccatg 660
ggatctggca ctgccgtggc caagactgcc tctgagatgg tgctggctga cgacaacttc 720
tccaccatcg tarctgctgt ggaggarggc cgcgccatct acaacaacat gaagcagttc 780
atccgctacc tcatttcctc caacgtgggc gaggtggtct gtatcttcct gaccgctgcc 840
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gggctcccag ccacagccct gggcttcaac ccaccagacc tggacatcat ggaccgcccc 960
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gatgggcctc atgtcaacta cagccagctg actcacttca tgcagtgcac cgaggacaac 1140
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ctgtccgtgc tggtgaccat cgagatgtgc aatgcactga acagcctgtc cgaraaccag 1260
tccctgctgc ggaattgcma cccctggggt traacaattc ttgggctggc tgggsttcca 1320
ttcttggnct tcttccaatg ttcccctggc ancttccctc aattccctcc taatgnttga 1380
acccccttg cccgaatgaa tctttnaagg cttccggggc ccttggaacc ttcaanccaa 1440
gttgggttaa tggttcctcc aagattttca attggccagt taantggggg ttc 1493

<210> 181
<211> 2040
<212> DNA
<213> Homo sapiens

<400> 181
gcatgagctc atgcaagagg caggggatga gtgtgagccc gagtggtgtg atgccgagga 60
cccactcttc atcctgtaca ccagtggctc cacaggcaaa cccaagggtg tggttcacac 120
agttgggggc tacatgctct atgtagccac aaccttcaag tatgtgtttg acttccatgc 180
agaggatgtg ttctggtgca cggcagacat tggttggatc actggtcatt cctacgtcac 240
ctatgggcca ctggccaatg gtgccaccag tgttttgttt gaggggattc ccacatatcc 300
ggacgtgaac cgcctgtgga gcattgtgga caaatacaag gtgaccaagt tctacacagc 360
acccacagcc atccgtctgc tcatgaagtt tggagatgag cctgtcacca agcatagccg 420
ggcatccttg caggtgttag gcacagtggg tgaacccatc aaccctgagg cctggctatg 480
gtaccaccgg gtggtaggtg cccagcgctg ccccatcgtg gacaccttct ggcaaacaga 540
gacaggtggc cacatgttga ctccccttcc tggtgccaca cccatgaaac ccggttctgc 600
tactttccca ttctttggtg tagctcctgc aatcctgaat gagtccgggg aagagttgga 660
aggtgaagct gaaggttatc tggtgttcaa gcagccctgg ccagggatca tgcgcacagt 720
ctatgggaac cacgaacgct ttgagacaac ctactttaag aagtttcctg gatactatgt 780
tacaggagat ggctgccagc gggaccagga tggctattac tggatcactg gcaggattga 840
tgacatgctc aatgtatctg gacacctgct gagtacagca gaggtggagt cagcacttgt 900
ggaacatgag gctgttgcag aggcagctgt ggtgggccac cctcatcctg tgaagggtga 960
atgcctctac tgctttgtca ccttgtgtga tggccacacc ttcagcccca agctcaccga 1020
ggagctcaag aagcagatta gagaaaagat tggccccatt gccacaccag actacatcca 1080
gaatgcacct ggcttgccta aaacccgctc agggaaaatc atgaggcgag tgcttcggaa 1140
gattgctcag aatgaccatg acctcgggga catgtctact gtggctgacc catctgtcat 1200
cagtcacctc ttcagccacc gctgcctgac catccagtga acatgatcct gacctttacc 1260
taggattcct cctgctccaa actttgccca tcctctttgc cccctcagga gtgctgaggg 1320
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gaggcagctg tgtaatccta tgtcagctct cttaggaagc cccagtactt atattgggca 1620
tgcacttgcc cttaaaaaca atgatttgtg agtccaggaa caatttacta tttttaaaat 1680
attttgctgc ttctgttctg ggtctgaatt ccccttttgtg ccagatgcca gtactgtctg 1740
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gcttctttga aggagtaaat gtgttttgtt cctagggcca gaggagcttg tcttccttgt 1860
cctctgttcc caccctcccc tgaacagaac ccagcccata agagacattc tcagatgaaa 1920
ctctgttttc ttgccccagt caggctcaag ccctgtggtt gtaggaataa agcctgtgat 1980
ctcaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaactcgaa 2040

<210> 182
<211> 969
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (128)
<223> n equals a,t,g, or c

<400> 182
agacagttct nattctcccc agggcaggga gcaggttatg accaggacta aggtcccaaa 60
gtccccaccc tgaacccctc cctgctgttc caccgctccc tcatatccac ccctgcccca 120
tctcctgnac tttggtcacg ctagcatctt ctgctgatcc tgaaattgta ccagcggcaa 180
gatgtggcct ggaaggggac tttaagttct ccacaactgc cagcaatcct tccaccaggc 240
aaaacacatc atctaaggaa aagaagtgag gtttgcttag ggcgtggcag cttcggataa 300
acgcaggact ccgcctggca gcccgatttc tcccggaacc tctgctcagc ctggtgaacc 360
acacaggcca gcgctctgac atgcagaagg tgaccctggg cctgcttgtg ttcctggcag 420
gctttcctgt cctggacgcc aatgacctag aagataaaaa cagtcctttc tactatgact 480
ggcacagcct ccaggttggc gggctcatct gcgctggggt tctgtgcgcc atgggcatca 540
tcatcgtcat gagtgagtgg aggagctcgg gggagcaggc gggccggggc tggggctccc 600
ctcccctgac cactcagctc tccccaacag gtgcaaaatg caaatgcaag tttggccaga 660
agtccggtca ccatccaggg gagactccac ctctcatcac cccaggctca gcccaaagct 720
gatgaggaca gaccagctga aattgggtgg aggaccgttc tctgtcccca ggtcctgtct 780
ctgcacagaa acttgaactc caggatggaa ttcttcctcc tctgctggga ctcctttgca 840
tggcagggcc tcatctcacc tctcgcaaga gggtctcttt gttcaatttt ttttwatcta 900
aaatgattgt gcctctgccc aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 960
aaaaaaaga 969

<210> 183
<211> 1452
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1430)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1441)
<223> n equals a,t,g, or c

<400> 183
gtcgacccac gcgtccnncc acggtccggt ggggagaagc cgggaggact gggtgcgcct 60

gcagggatcg gaagccggtt ggggtgtgag aggttttctc gctctaggga gattcttcaa 120
gcaatcacta tgtcaacaga cacaggtgtt tcccttcctt catatgagga agatcaggga 180
tcaaaactca ttcgaaaagc taaagaggca ccattcgtac ccgttggaat agcgggtttt 240
gcagcaattg ttgcatatgg attatataaa ctgaagagca ggggaaatac taaaatgtcc 300
attcatctga tccacatgcg tgtggcagcc caaggctttg ttgtaggagc aatgactgtt 360
ggtatgggct attccatgta tcgggaattc tgggcaaaac ctaagcctta gaagaagaga 420
tgctgtcttg gtcttgttgg aggagcttgc tttagttaga tgtcttatta ttaaagttac 480
ctattattgt tggaaataaa ctaatttgta tgggtttaga tggtaacatg gcattttgaa 540
tattggcttc ctttcttgca ggcttgattt gcttggtgac cgaattacta gtgactagtt 600
tactaactag gtcattcaag gaagtcaagt taacttaaac atgtcaccta aatgcacttg 660
atggtgttga aatgtccacc ttcttaaatt tttaagatga acttagttct aaagaagata 720
acaggccaat cctgaaggta ctccctgttt gctgcagaat gtcagatatt ttggatgttg 780
cataagagtc ctatttgccc cagttaattc aacttttgtc tgcctgtttt gtggactggc 840
tggctctgtt agaactctgt ccaaaaagtg catggaatat aacttgtaaa gcttccccaca 900
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tgtcatcttg aaatagaaat atgtatttta agcactcacg caaaggtaaa tgaacacgtt 1140
ttaaatgtgt gtgttgctaa tttttccat aagaattgta aacattgaac tgaacaaatt 1200
acctataatg gatttggtta atgacttatg agcaagctgg tttggccaga cagtataccc 1260
aaacttttat ataatataca gaaggctatc acacttgtga aattctcttg tctaatctga 1320
atttgcattc catggtgtta acatggtata tgtattgtta ttaaagtaag tgacccatgt 1380
caaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaan aaaaaaaaaa 1440
naaaaaaaaa aa 1452

<210> 184
<211> 2119
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2090)
<223> n equals a,t,g, or c

<400> 184
aaattgaaac ttctaataaa aatgatatga ctatagatat attacatgct gatggtgaaa 60
gacctaatgt tctagaaaac ctagacaact caaaggaaaa gactgttgga tcagaagcag 120
caaaaactga agatacagtt ctctgcagca gtgatacaga tgaggagtgt ttaatcattk 180
wtacagaatg taaaaataat agtgatggaa agacagctgt tgtgggttct aacttaagtt 240
ccagaccagc tagtccaaat tcttcctcag gacaggcttc tgtaggaaac cagactaata 300
ctgcttgtwg tcctgaagag tcatgtgttt taaaaaaacc tatcaaacga gtatataaaa 360
aatttgatcc agttggagag attttaaaaa tgcaggatga gctcttwaag ccaatttcca 420
gaaaagtacc agaattgccc ttaatgaatt tagaaaattc taaacagcct tctgtttctg 480
agcaattgtc tggtccttca gactcctcta gttggccgaa atctggatgg ccttctgcat 540
ttcagaagcc aaaaggacga ttgccatatg aacttcagga ctatgttgaa gatacatcgg 600
aatacctagc tcctcaggaa ggaaattttg tttataagtt atttagcctg caagacctgt 660
tgttactcgt acgctgcagt gtccagagga tagagacaag accacgttct aaaaaacgga 720
agawwatyag aagacaattt ccagtttatg tactaccaaa agtagagtat caagcttgtt 780
atggagttga agctctgact gaaagtgaac tttgtcgctt atggactgaa agtttattgc 840
attccaacag ctcattttat gttgggcata tcgatgcatt tacttcaaaa ctttttctac 900

tggaagaaat tacctcagaa gaattaaaag aaaagctttc agcactcaag atttccaatt 960
tatttaacat cctccaacac attctaaaga aactaagtag cttgcaggag ggttcctact 1020
tgttatctca tgcagcagaa gattcttcac tcctgattta taaggcctct gatggaaaag 1080
ttactaggac agcatacaat ttgtataaaa cacattgcgg ccttcctggt gtaccttcca 1140
gtctctcagt tccctgggtc ccattagatc ccagcctgtt attaccatat catatccatc 1200
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gtatgctttt caccccttraa gtttgaggag gatcttgata tgttttaaca ttatcatggc 1620
agggaaatat ataaagaaga aaaatatttt tacattaaac cttttctaaa aattgtaaat 1680
agaaaaataa tttggttttt tatcaagaac aacacttatc gttatgtatt gtgttagtta 1740
tattgccagt ctgttgcgac tgactcaaaa agttaaatgt tgccactgct gaagatgatt 1800
atgagcatcg caaactttgt ttctgaccca ttttgacagt ttttatatac tcctttaaaa 1860
tgatgaatgt tacaggttaa taaagttaat acctttaaaa acttggtgaa attccattac 1920
agaagccaaa aataaaaact ccctgcctct gaaaagtcag attactgact tcttgtttgg 1980
caaccatcag tttgtttaat aaaagaaaaa atttggtggt ataacatgtt tgatgacaga 2040
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tatgttttcc agaaaaaaa 2119

<210> 185
<211> 1325
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1319)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1320)
<223> n equals a,t,g, or c

<400> 185
atgactgggg agcgacccag ncacggcgct cccgggacag acgctggggg ccscggaatc 60
tctccctgga tattggcact gaagtgtttg cccctggacc gggctctggt attcagaaac 120
agcgggagcc acggaagggc cgcctcatcg tgtgtggcca tgggacgctg gagcgggacg 180
gagtcttctg tctcctcagc gatgatcatg gtgcctcctg gcgctacgga agtggggtca 240
gcggcatccc ctacggtcag cccaagcagg aaaatgattt caatcctgat gaatgccagc 300
cctatgagct cccagatggc tcagtcgtca tcaatgcccg aaaccagaac aactaccact 360
gccactgccg aattgtcctc cgcagctatg atgcctgtga tacactaagg ccccgtgatg 420
tgaccttcga ccctgagctc gtggaccctg tggtagctgc aggagctgta gtcaccagct 480

ccggcattgt cttcttctcc aacccagcac atccagagtt ccgagtgaac ctgaccctgc 540
gatggagctt cagcaatggt acctcatggc ggaaagagac agtccagcta tggccaggcc 600
ccagtggcta ttcatccctg gcaaccctgg agggcagcat ggatggagag gagcaggccc 660
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ctggtgaaag tccccagatg gcaggatatt tggtttcaga gtaaggacta ggtgcaccac 1200
catgactgac tatcaatcaa aatgtttgta acttaaaatt tttaatgaag gataatgaat 1260
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aaaaa 1325

<210> 186
<211> 433
<212> DNA
<213> Homo sapiens

<400> 186
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agtgccagtg gcagcaggaa agctcccttt ctcaagaatg cccatctgtg aacacatggt 180
agagtctcca acctgttccc agatgtccaa cctggtctgc ggcactgatg ggctcacata 240
tacgaatgaa tgccagctct gcttggcccg gataaaaacc aaacaggaca tccagatcat 300
gaaagatggc aaatgctgat cccacaggag cacctcaagc catgaagtgt cagctggaga 360
acagtggtgg gcatggagag gatatgacat gaaataaaag atccagccca aaaaaaaaaa 420
aaaaaaaaaa aaa 433

<210> 187
<211> 859
<212> DNA
<213> Homo sapiens

<220>
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<222> (803)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (853)
<223> n equals a,t,g, or c

<400> 187
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gcggtttacg agtgacttgg ctggagcctc aggggcgggc actggcacgg aacacaccct 180
gaggccagcc ctggctgccc aggcggagct gcctcttctc ccgcgggttg gtggacccgc 240

tcagtacgga gttggggaag ctctttcact tcggaggatt gctcaacaac catgctgggc 300
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gttgagactc agaacttgga aggcctgcat catgatggcc aattctgcca taagccctgt 480
cctccaggtg aaaggaaagc tagggactgc acagtcaatg gggatgaacc agactgcgtg 540
ccctgccaag aagggaagga gtacacagac aaagcccatt tttcttccaa atgcagaaga 600
tgtagattgt gtgatgaagg acatggctta kaagtggaaa taaactgcac ccggacccag 660
aatmccaagt gcagatgtaa accaaacttt ttttgkaact ctactgtatg tgaacactgt 720
gacccttgca ccaaatgtga acatggaatc atcaaggaat gcacactcac cagcaacacc 780
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<210> 188
<211> 833
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (65)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (798)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (803)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (809)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (812)
<223> n equals a,t,g, or c

<400> 188
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cagtnagact ctgtctcaaa ataaataaat aagtaaatag aacctcctga gctaccctgg 120
cttataagga ttcagattac tttaggaaat taggcattag cactaggagg ggggaagatg 180
gctggcaaaa cttctagcta gcaacctatg tctagcacat gggtaactaa ccatagcgag 240
atcctgaaca catatcctct aggtgcaggt ggagggaacg atgtccaata cctgaagcag 300
aatctcacat ggacggaacg tctgtatttc cctctcctgc acgaatcact catcattctt 360
ggagggcttc tctgcattcc tccttttctt ctctcccctc ccctgccttt tgtcttttct 420
aaagagtctg aactccgatt tccatgctct cctgctacat taataagcaa aacctgcttg 480

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tgtgtacggt tctttactgg aaacatgact ttttgtttct gtattggttt tactgtcatc 540
cagttttcta gtttaatatc tagcaaaact aaatctgaat gtactcgctt tttccgttaa 600
gtatgccaag cacctcggtt gaaaggcttg actcaaacca gaagtcttgc tggaattcgt 660
ctctgaacac ttgaaaaaca gaaaccctga gccgcaacaa acatgcctct gtgtgtcggg 720
attgcctttg tctctgcttc catgtggctt ttcctttgt agctatgctt agtgacataa 780
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<210> 189
<211> 2211
<212> DNA
<213> Homo sapiens

<400> 189

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cgagggcgat gaagaagcag aggaagaaca agaagagaac cttgaagcaa gtggagacta 180
taaatattca ggaagagata gtttgatttt tttggttgat gcctccaagg ctatgtttga 240
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gtacatcagt aagatcataa gcagtgatcg agatctcttg gctgtggtgt tctatggtac 360
cgagaaagac aaaaattcag tgaattttaa aaatatttac gtcttacagg agctggataa 420
tccaggtgca aaacgaattc tagagcttga ccagtttaag gggcagcagg gacaaaaacg 480
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cggtgatctc cgagatacag gcatcttcct tgacttgatg cacctgaaga aacctggggg 720
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<210> 190
<211> 1659
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1582)
<223> n equals a,t,g, or c

<400> 190
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tcgaagactg gagtaaatta catgctgagc tcagtgagca aatcaaatca tttgagaagt 120
ctcagaaaga tttggaagta gctcttactc acaaggatga taatattaat gctttgacta 180
actgcattac acagttgaat ctgttagagt gtgaatctga atctgagggt caaaataaag 240
gtggaaatga ttcagatgaa ttagcaaatg gagaagtggg aggtgaccgg aatgagaaga 300
tgaaaaatca aattaagcag atgatggatg tctctcggac acagactgca atatcggtag 360
ttgaagagga tctaaagctt ttacagctta agctaagagc ctccgtgtcc actaaatgta 420
acctggaaga ccaggtaaag aaattggaag atgaccgcaa ctcactacaa gctgccaaag 480
ctggactgga agatgaatgc aaaaccttga ggcagaaagt ggagattctg aatgagctct 540
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ttaaaaacca gatcgctacc catgagaaga aagctcatga aaactggctc aaagctcgtg 780
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<210> 191
<211> 3894
<212> DNA
<213> Homo sapiens

<400> 191
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aaaccaaggt tctgagccca aatatactca agaactaact ctgaagaggc agaaacagaa 120
agtgtgcatg gaggaaaccc tgtggctaca ggataatatc agagataaac tgcgtcccat 180
tcccataact gcctcagtgg agatccaaga gccaagctct cgtaggcgag tgaattcact 240
tccagaagtt cttccaattc tgaattcaga tgaacccaag acagctcata ttgatgttca 300

cttcttaaaa gagggatgtg gagacgacaa tgtatgtaac agcaacctta aactagaata 360
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tgtaccagaa ctagttctaa aagatcagaa ggatattgct ttagaaataa cagtgacaaa 480
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<210> 192
<211> 695
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

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<222> (11)
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<400> 192
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<210> 193
<211> 3131
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3128)
<223> n equals a,t,g, or c

<400> 193
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gctgcaggat tcggcacgag gccacttcct ggggccgccg gcggggccgc tggctgcact 120
cagcgccgga gccgggagct agcggccgcc gccatgtccc accagaccgg catccaagca 180
agtgaagatg ttaaagagat ctttgccaga gccagaaatg gaaagtacag acttctgaaa 240
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gataaggatt atgattcctt tgttttaccc ctgttggagg acaaacaacc atgctatata 360
ttattcaggt tagattctca gaatgcccag ggatatgaat ggatattcat tgcatggtct 420
ccagatcatt ctcatgttcg tcaaaaaatg ttgtatgcag caacaagagc aactctgaag 480
aaggaatttg gaggtggcca cattaaagat gaagtatttg gaacagtaaa ggaagatgta 540
tcattacatg gatataaaaa atacttgctg tcacaatctt cccctgcccc actgactgca 600
gctgaggaag aactacgaca gattaaaatc aatgaggtac agactgacgt gggtgtggac 660
actaagcatc aaacactaca aggagtagca tttcccattt ctcgagaarc ctttcaggct 720
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<210> 194
<211> 2058
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2045)
<223> n equals a,t,g, or c

<400> 194
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cttttcgtgg cactataaag ggtgctgcac ggcgcttgca tctcttcgcc tctcggagct 240
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catcccttct acacccgggc cgccaccatg ataggcgaga tcgccgccgc cgtgtccttc 600
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<210> 195
<211> 831
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (44)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (791)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (793)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (806)
<223> n equals a,t,g, or c

<400> 195
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agtggatccc ccgggctgca ggaattcggc agagttcgac ctctgctgca gcccgtgccg 120
ccgccgcctc ctgggaagag aggaagcggg agaggagccc acgtcgcctg tcacccaata 180
tctccagccg cgcagtcccg aagagtgtaa gatgttcgcc tgcgccaagc tcgcctgcac 240
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atctcgacca gaggctagta ggactggaga gggctctacg gtatttaatg gggcccagaa 360
tggtgtgtct cagctaatcc aaagggagtt tcagaccagt gcaatcagca gagacattga 420
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tggcattcat attaattacg gatgtaattc tgtgtatctt actgtgactc cgaaaactgt 720
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<210> 196
<211> 961
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (31)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (923)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (947)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (953)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (954)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (960)
<223> n equals a,t,g, or c

<400> 196
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tatgtatata tgcttaacta cacccgagga agctgtagag ttagaaaaac atgaaccatt 180
aacagatgtg gcctccctgc agaactttta ctttgaaaaa gaagtacgtc tgaaccagat 240
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g 961

<210> 197
<211> 606
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (488)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (500)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (603)
<223> n equals a,t,g, or c

<400> 197
gcttgggtct gtcccgggtg gacgacgccg tggctgccaa cacccgccag tgygcccaga 60
ggagggacag gagaggcggt gaaggaagag ggcaggggat cgagccttca cccgcctctg 120
ccaccccagg gactcgggga gtatgccgca tgccagtcac acgccttcat gaagggcgtt 180
ttcaccttcg tcacaggcac cggcatggcc tttggcttgc agatgttcat tcagaggaag 240
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tacggggtga cgagagtgga gtcggagaaa tgcaacaacc tctggctctt cctggagacc 360
gggcagctcc ccaaagacag gagcacagat cagagaagct aggagagctc cagcaggggc 420
acagaggatt gggggcagga ggagtctgga acacagcctt catgcccccct gaccccaggc 480
cgaccctncc cacaccctan ggtaccccag tcgtatcctc tgtccgcatg tgtggccagg 540
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canaaa 606

<210> 198
<211> 393
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (253)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (354)
<223> n equals a,t,g, or c

<400> 198
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cttcctcctg ctggtggcag ctcccagatg ggtcctgtcc caggtgcagc tgcaggagtc 120
gggcccagga ctggtgaagc cttcacagac cctgtccctc acctgcactg tctctggtgg 180
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ggagtggatt ggntwcatct attacagtgg gascacctac tacaayccgt ccctcaarag 300
tctagttasc atatcastag acacgtctaa gaaccasttc tccctgaasc tganctctgt 360
gackgccgcg gacacggmcg tgtattactg tgc 393

<210> 199
<211> 1061
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1035)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1056)
<223> n equals a,t,g, or c

<400> 199
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ctgtgtacac caacgtcctg gtccagaaca ggtcagacac aagatcccct cacctcaccc 180
caccccccgcc ccagctggag acctgccccg gtgcccccac taggcaggca gcagctggaa 240
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<210> 200
<211> 1359
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1005)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1128)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1342)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1343)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1344)
<223> n equals a,t,g, or c

<400> 200
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gcatgcgtgg tcttcaccct tggcatgttc tccgccggcc tctcggacct caggcacatg 180
cgaatgaccc ggagtgtgga caacgtccag ttcctgccct ttctcaccac ggaagtcaac 240
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<210> 201
<211> 726
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (179)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (724)
<223> n equals a,t,g, or c

<400> 201
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ctctagaact agtggatccc ccgggctgca ggaattcggc acgaggagag aactagtctc 120
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ggcnta 726

<210> 202
<211> 2714
<212> DNA
<213> Homo sapiens

<400> 202
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<211> 422
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<220>
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<222> (419)
<223> n equals a,t,g, or c

<400> 203
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gg 422

<210> 204
<211> 2339
<212> DNA
<213> Homo sapiens

<220>
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<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (47)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (91)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (125)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (199)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2238)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2321)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2329)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (2334)
<223> n equals a,t,g, or c

<400> 204
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ggatgggttc agctgytcnt gccctctggg ctttragggg cagcggtgtg agatcaaccc 240
agatgactgt gaggacaacg actgcgaaam caatgccacc tgcgtggacg ggatcaacaa 300
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<210> 205
<211> 1655
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (1548)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1559)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1564)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1623)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1643)
<223> n equals a,t,g, or c

<400> 205
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<210> 206
<211> 5145
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5126)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5143)
<223> n equals a,t,g, or c

<400> 206
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<210> 207
<211> 487
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (470)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (483)
<223> n equals a,t,g, or c

<400> 207
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<210> 208
<211> 2296
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (202)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (252)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2258)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2285)
<223> n equals a,t,g, or c

<400> 208
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<210> 209
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<213> Homo sapiens

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<223> n equals a,t,g, or c

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<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (600)
<223> n equals a,t,g, or c

<400> 209
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<211> 1551
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (760)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1543)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1544)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1545)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1546)
<223> n equals a,t,g, or c

<400> 210
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<210> 211
<211> 1011
<212> DNA
<213> Homo sapiens

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<222> (309)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (801)
<223> n equals a,t,g, or c

<400> 211
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ctcaagcggg agcattcgct cattaagccc taccaagggg tcggttccag ctctatgccc 240
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<210> 212
<211> 1639
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (1630)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1637)
<223> n equals a,t,g, or c

<400> 212
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aaaaaaaaan gggggggncc 1639

<210> 213
<211> 2127
<212> DNA
<213> Homo sapiens

<400> 213
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<210> 214
<211> 1166
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1163)
<223> n equals a,t,g, or c

<400> 214
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<210> 215
<211> 3323
<212> DNA
<213> Homo sapiens

<400> 215
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tcagctgaag acgcagctgg agtggacaga agccatcctg gaggatgagc agacacagcg 2880
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gctgaaggag agactagaaa aagagaagaa gttaacaagt gacctggggc gcgccgccac 3060
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ctctgtctga gtttcctctt tggaaaaaga agttactgtt caacttacca aaatgcctta 3240
cacattcctt acaaataaac caaccaacct acaaaaaaaa aaaaaaaaaa aactcgaggg 3300
ggggcccggt acccaattcg ccc 3323

<210> 216
<211> 1408
<212> DNA
<213> Homo sapiens

<400> 216
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cttaaaacta aaaacttgag tctaccattt cttggttgca ctgaaaatac cgcccagcct 180
gatggtgttc ccgtgctgtc cctccccctt cccttctccc cgcgtctacc tccccacccc 240
gttctgttcc ccctccctcc ttctccctct ccctcaaatc cgtgagtttt ggaagcccca 300
gggcctctct cccccgcccc tcctggatga ggccaccatc ccccaaaccg gcttgttttg 360
cagtttcccc aggatcctgg aagctcgctg gcgctcgagg gtggcgggga cacgggggg 420
tgggtgaagg ttcgttacct ttctagtgc gttctatcat agttaacggt tgcacacttt 480
tttaaaaaaa gtaaatggat ttgccacaat taaatgtcat aacatttatg acagaatata 540
aaatattaac atattttaag ccaagtttta ggtgtatttt ttgaatcttg gttataaacc 600
caattttaaa gggcgatgta tccagcgttg tgaaggcaac agagtgtacc catatttata 660
tttttataaa atacctataa gactgtgaat ctcttgtgct aatggctgag ttaattgaag 720
gatcgttttg ccccttttta gcctcccaga gcttcgagga ctcaattcga acccgaaatc 780
ctgccgtggg ggaggggttg cgtcgagacc tgggcccggg gaggttctcc tgcgtcactt 840
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tacctttttta attatgttaa ttaatgttaa gactttctag gcttatatcg aagctgtgtg 1260
tgggtcacgg ggtgatcact gctaactgga taaagtttgt gcagcacatt cctgagtgta 1320
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atattaaaaa aaaaaaaaaa aaaaaaa 1408

<210> 217
<211> 2111
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2102)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2104)
<223> n equals a,t,g, or c

<400> 217
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cttacagttg tggcattgaa tgttcagtat cgcttccttt ctgcacacga ggcatactgt 120
tgagcctgag aaatgccagt ggcctgacag cagcagacat tgcacaaacc cagggtttcc 180
aagagtgtgc ccagtttctc ttgaacctcc agaattgtca tctgaaccat ttctataaca 240
atggcatctt aaatgggggt catcagaatg tatttcctaa tcatattagt gtgggaacaa 300
atcgaaagag atgcttggga agactcagaa gactttggag taaagaaagc tagaactgaa 360
gctcaaagct tggattctgc cgtgccactc acgaatggcg acacagaaga cgatgctgac 420
aaaatgcacg ttgataggga gtttgctgtt gtaacagata tgaaaaacag tagctccgta 480
tcgaatacat tgacaatgga tgtgtcatca atggacattt ggacttcccc tccacgaccc 540
cgctcagtgg gatggaaagc aggaatggcc agtgcttgac aggaactaac ggaattagca 600
gtggattagc cccaggacag ccgtttccga gtagccaggg ttctctctgc attagtggga 660
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accacatgta acagattcct ttatatgtag tgaaaatcac tatttgtaga aactgtcagg 1680
tcaaaatatt taactgactg ttgacatgta ttttcttttt tccttgtttt tgtttttttgg 1740
ggtttctgc tttaagatat ataccactat gtatatccag ttaactgaga gaattttgac 1800
tctcttaata aaactgcatt aagtttttga ttttgtagaa attagctttt gtctaggcaa 1860
ctagtggtta tactctgcaa atattgtaat gaatttttac ttttttgatt tttgtaataa 1920
aaattggtgc agataaaatg tcaaatgaac aaaccagtgt tctaagagtg ttactaacat 1980
tttgttctaa aactgtcctt cacaaattga ataaaaaact ctcacactca aaaaaaaaaa 2040
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2100
ananaaaaaa a 2111

<210> 218
<211> 2493

<212> DNA
<213> Homo sapiens

<400> 218
ggcccggtgg ggccggccgg gactcgccgc tcgcacgccc ttgggccgcg gccgggcgcc 60
cgctcttcct tccgcttgcg ctgtgagctg aggcggtgta tgtgcggcaa taacatgtca 120
accccgctgc ccgccatcgt gcccgccgcc cggaaggcca ccgctgcggt gattttcctg 180
catggattgg gagatactgg gcacggatgg gcagaagcct ttgcaggtat cagaagttca 240
catatcaaat atatctgccc gcatgcgcct gttaggcctg ttacattaaa tatgaacgtg 300
gctatgcctt catggtttga tattattggg ctttcaccag attcacagga ggatgaatct 360
gggattaaac aggcagcaga aaatataaaa gctttgattg atcaagaagt gaagaatggc 420
attccttcta acagaattat tttgggaggg ttttctcagg gaggagcttt atctttatat 480
actgccctta ccacacagca gaaactggca ggtgtcactg cactcagttg ctggcttcca 540
cttcgggctt cctttccaca gggtcctatc ggtggtgcta atagagatat ttctattctc 600
cagtgccacg gggattgtga ccctttggtt cccctgatgt ttggttctct tacggtggaa 660
aaactaaaaa cattggtgaa tccagccaat gtgaccttta aaacctatga aggtatgatg 720
cacagttcgt gtcaacagga aatgatggat gtcaagcaat tcattgataa actcctacct 780
ccaattgatt gacgtcacta agaggccttg tgtagaagta caccagcatc attgtagtag 840
agtgtaaacc ttttcccatg cccagtcttc aaatttctaa tgttttgcag tgttaaaatg 900
ttttgcaaat acatgccaat aacacagatc aaataatatc tcctcatgag aaatttatga 960
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caccagattt tttattacat catttgaaaa ttagcagtat gcttaatgaa aatttgttca 1140
ggtataaatg agcagttaag atataaacaa tttatgcatg ctgtgactta gtctatggat 1200
ttattccaaa attgcttagt caccatgcag tgtctgtatt tttatatatg tgttcatata 1260
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tattttggga ccaggctttt attttccctg atattatttc tatttaatac tcttttctct 1440
caagaaaaaa aaaaaagttt gtttttttctt tattgtcctt catagcaggc caagtattgc 1500
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atagcaatca ttttaaattg tcaaaatttc cagattactg gtaaaaatta tttgaaaaca 2040
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tgaaatattg tgctgtaaca tgggaaagtg taaatgtttt tcatggtttc tatcaatgtg 2460
aaataaaatt taattctgaa aaaaaaaaaa aaa 2493

<210> 219
<211> 1259
<212> DNA
<213> Homo sapiens

<400> 219
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aggagctgcg gctgcaggag gagagcgtgc ggctgcacca gattaacatc tacctcagcg 120
accgcatctc actgcaccgc cgcctgcccg wgcgctggaa cccgctgtgc aaagagaaga 180
aatatgatta tgataatttg cccaggacat ctgttatcat agcattttat aatgaagcct 240
ggtcaactct ccttcggaca gtttacagtg tccttgagac atccccggat atcctgctag 300
aagaagtgat ccttgtagat gactacagtg atagagagca cctgaaggag cgcttggcca 360
atgagctttc gggactgccc aaggtgcgcc tgatccgcgc caacaagaga gagggcctgg 420
tgcgagcccg gctgctgggg gcgtctgcgg cgargggcga tgttctgacc ttcctggact 480
gtcactgtga gtgccacgaa gggtgctgga gccgctgctg cagaggatcc atgaagagga 540
gtcggcagtg gtgtgcccgg tgattgatgt satcgactgg aacaccttcg aatacctggg 600
gaactccggg gagccccaga tcggcggttt cgactggagg ctggtgttca cgtggcacac 660
agttcctgag agggagagga tacggatgca atcccccgtc gatgtcatca ggtctccaac 720
aatggctggt gggctgtttg ctgtgagtaa gaaatatttt gaatatctgg ggtcttatga 780
tacaggaatg gaagtttggg gaggagaaaa cctcgaattt tcctttagga tctggcagtg 840
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tgtgacagag aggaagcagc tccgggacaa gctccagtgt aaagacttca agtggttctt 1080
ggagactgtg tatccagaac tgcatgtgcc tgaggacagg cctggcttct tcgggatgct 1140
ccagaacaaa ggactaacag actactgctt tgactwtaac cctcccgatg aaaaccagat 1200
tgtgggacac caggtcattc tgtacctctg tcatgggatg ggccagaatg acctggtgc 1259

<210> 220
<211> 1849
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (920)
<223> n equals a,t,g, or c

<400> 220
ctgttgtatg gagcagggtg tgtgggtttt ctgggcccat cattatggct gcttcagagt 60
cagaagaaag ccatagggca gtaggggagc tcctattgcc tagcccctct ccctttgtgg 120
ctcccactct agctgcctat ttttgctcat cagctggtga gtcagtatgg gccagcagtt 180
ctccctccct aagcccttgc tactttatgg gttagctttg caggtttggt ggcttgaggg 240
gtgggggcaa ctcaccactg ccaggtaact ccctgaaggg tgggagtgga ttatcttcta 300
ggctcttacc cgcggtaggg aagggcatca acactgtctt ccttccattc tcctttcccc 360
catcccattt agtgctgcca cagggcagaa gcacacaaac caaccacaca gtctctgact 420
tctcctaagc actttgagtt gttgaatggg gctcaggggc aagagttttt gctgccctcc 480
ccagcgtggt cacagggtta ttgaactgcc tgcacttgtt tctcatgcaa ctccagcatt 540
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cacctcgcca atgttgttgt tgctgccttt ttgatttgta tcctctgtta tagacatttt 1020
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gctctgaaat ggtttcccta cacagagtgg gttttggcaa gggttggaat gaggggaggt 1800
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<210> 221
<211> 1267
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1244)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1252)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1264)
<223> n equals a,t,g, or c

<400> 221
cggattatgc ngamacnccc cagggnttrt gctatgacgt cgcatgcacg cgtaagcttg 60
ggcccctcga gggatcctct agagcggccg ccgcggcatt cggggaatct gcagggcaga 120
tgagtaacga aagaggcttt gaaaatgtag aactgggagt cataggaaaa aagaagaaag 180
tcccaaggag agtcatccac tttgttagtg gtgaaacaat ggaagaatat agcacagatg 240
aagacgaagt tgatggcctg gagaagaaag atgttttgcc tactgttgat ccgacaaaac 300
ttacctgggg tccctactta tggttttaca tgcttcgggc tgctacatca actctctcag 360
tgtgtgactt ccttggagag aagattgcat ctgttttggg tatcagcacc ccaaagtacc 420
aatatgccat tgatgaatat tatcggatga agaaggagga agaagaagaa gaagaagaaa 480
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cataaaatga aatgactatc aagcttcaaa ctcttaagtt tttttttttt aatacaaaaa 720
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gaaattcaga tatttgtact gtttttactg tgtatagaaa ttagtgcttt ggttttaaaa 900
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taataaaagg agcaagatgg aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1200
aaaaggggcg gacgcgtggg tccgacccgg gaattcccgg atcngtcact gncgggctga 1260
cttntct 1267

<210> 222
<211> 754
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (702)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (710)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (754)
<223> n equals a,t,g, or c

<400> 222
cagagaactg agatgaaagc aatgatgaag ggaccctggg accctgcctt tcctctccct 60
actcagcagg agcttatgaa gtcatctcac tttctcttct gtccccccctc tcctcttcat 120
gcaggtataa agaaatatga ggccccaatt ggaacagcag catggagggt cccagttggg 180
tccccaacgt gctccccatg ggcaagacaa tggaaacttc cacaagcagg gaaggcaaac 240
cctctttatt gaacattagc cagcccagcc cagaccccag ggctgctaag gacacagaga 300
ttctccatgg gaaggggact gccaagcatg aggaaatagа agattcaggg gcctgarctc 360

tggaagctgc aagcaaaagg gatgggacta gggctgagtt gtgtctycat tttgataagg 420
aaaggatatg ctcacactct tgcttgttca gattccaaga cagaaggctt cacaaggcca 480
acgcctggaa aatgggcatc tctccctccc atgttaagct ttaacctctg taatctgcct 540
gtatctatag gtgggcatct cactccatca aaggagccca gcctcttttg tcctctacca 600
tgcacagtct ttctgtgcat ttccccaagc tgggccctct tctactctca tttaggcctg 660
tgataactca ttacccaccc atcacttgtg tcttcagggc anacttggcn aagcagggaa 720
ttgccttgga cataaattga agggcactcc tttn 754

<210> 223
<211> 1258
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1205)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1241)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1247)
<223> n equals a,t,g, or c

<400> 223
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ggagaacctg tacttccagc gctgcctaga ctggaaccgt gacatcctca agaaggagct 120
gggactgaca gagcaggaca tcattgacct gcccgctctg ttcaagatgg acgaggacca 180
ccgtgccaga gccttcttcc caaacatggt gaacatgatc gtgctggaca aggacctggg 240
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tggcctcctg gagcccctgg gcctcgaatg caccttcatc gacgacattt ctgcctacca 360
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gtggtggcac atggtgccct gaccctccag gggccctggc gtttgcctcc ttmgcttart 480
tctccagacc ctycctcaca ygcccagagc cttctgctga catggactgg acagccccgc 540
tgggagacct ttgggacgtg gggtggaatt tggggtatct gtgccttgcc ctccctgaga 600
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aaccatgtgc ccaaactgct ccccaaaraa ttttgagtct ctaatctgac actgaatgag 780
gggagaaggg aaggagattc tgggattgcc agttcttcca gcagccatgc tctgaaaatc 840
aaggtagaat ccatggaaag ggaccccagg accccgggac cctagacgta tcttgaactg 900
ccatcgtcat ttcaaataca tctccctcag ggtttccagg tggccacccc caatwattca 960
ttccttacca acctctcaaa tcctcttggc tttctctctg cagtgtggac actgttggct 1020

agtcctcccc actccctgag ggtccagtaa gttacсttag aaccttcctg ggaaacattt 1080
catctggagg caggkttccc cacgtgtggg atgctccttt ttgcctcatc tgtcttcagg 1140
ggatggcagg ctccccсgca ttgcatgggg gatttttccc ccagaccagg cataatttgt 1200
ggacntgagg agtttcaatg tgttaaagat ggccctgggt naagccntat tccatctt 1258

<210> 224
<211> 584
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (494)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (495)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (577)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (583)
<223> n equals a,t,g, or c

<400> 224
cttacccaga aggcaacgct tctctttctg gtcaaaatgg ctggtaagca ggccgtttca 60
gcatcaggca agtggctgga tggtattcga aaatggtatt acaatgctgc aggattcaat 120
aaactggggt taatgcgaga tgatacaata tacgaggatg aagatgtaaa agaagccata 180
agaagacttc ctgagaacct ttataatgac aggatgtttc gcattaagag ggcactggac 240
ctgaacttga agcatcagat cttgcctaaa gagcagtgga ccaaatatga agaggaaaat 300
ttctaccttg aaccgtatct gaaagaggtt attcgggaaa gaaaagaaag agaagaatgg 360
gcaaagaagt aatcatgtag ttgaagtctg tggatgcagc tgttatgaag atggttaaac 420
ttgaaacaaa caattttaag aattatttgg tctgaagatg ttttacttta aataaatgtc 480
tattgtaatg gcwnnaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 540
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaggggnggc cgnt 584

<210> 225
<211> 3449
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2330)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3434)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3443)
<223> n equals a,t,g, or c

<400> 225
gcgagcacgt tagaaagcct gacatggcct gactcgggac agctcagagc agggcagaac 60
tggggacact ctgggccggc cttctgcctg catggacgct ctgaagccac cctgtctctg 120
gaggaaccac gagcgaggga agaaggacag ggactcgtgt ggcaggaaga actcagagcc 180
gggaagcccc cattcactag aagcactgag agatgcggcc ccctcgcagg gtctgaattt 240
cctgctgctg ttcacaaaga tgctttttat ctttaacttt ttgttttccc cacttccgac 300
cccggcgttg atctgcatcc tgacatttgg agctgccatc ttcttgtggc tgatcaccag 360
acctcaaccc gtcttacctc ttcttgacct gaacaatcag tctgtgggaa ttgagggagg 420
agcacggaag gggtttcccc agaagaacaa tgacctaaca agttgctgct tctcagatgc 480
caagactatg tatgaggttt tccaaagagg actcgctgtg tctgacaatg ggccctgctt 540
gggatataga aaaccaaacc agccctacag atggctatct tacaaacagg tgtctgatag 600
agcagagtac ctgggttcct gtctcttgca taaaggttat aaatcatcac cagaccagtt 660
tgtcggcatc tttgctcaga ataggccaga gtggatcatc tccgaattgg cttgttacac 720
gtactctatg gtagctgtac ctctgtatga caccttggga ccagaagcca tcgtacatat 780
tgtcaacaag gctgatatcg ccatggtgat ctgtgacaca ccccaaaagg cattggtgct 840
gatagggaat gtagagaaag gcttcacccc gagcctgaag gtgatcatcc ttatggaccc 900
ctttgatgat gacctgaagc aaagagggga gaagagtgga attgagatct tatccctata 960
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cctgagcgtc atctgcttca ccagtgggac cacaggtgac cccaaaggag ccatgataac 1080
ccatcaaaat attgtttcaa atgctgctgc ctttctcaaa tgtgtggagc atgcttatga 1140
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tgtacaggct gttgtgtaca gctgtggagc cagagttgga ttcttccaag gggatattcg 1260
gttgctggct gacgacatga agactttgaa gcccacattg tttcccgcgg tgcctcgact 1320
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aatgggatgt caggtgtatg aagcttatgg tcaaacagaa tgcacaggtg gctgtacatt 1620
tacattacct ggggactgga catcaggtca cgttggggtg cccctggctt gcaattacgt 1680
gaagctggaa gatgtggctg acatgaacta ctttacagtg aataatgaag gagaggtctg 1740
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cctggacagt gatggctggc ttcacacagg agacattggt cgctggctcc cgaatggaac 1860
tctgaagatc atcgaccgta aaaagaacat tttcaagctg gcccaaggag aatacattgc 1920
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cggggagagc ttacggtcat ccttagtagg agtggtggtt cctgacacag atgtacttcc 2040
ctcatttgca gccaagcttg ggtgaaggg ctcctttgag gaactgtgcc aaaaccaagt 2100
tgtaagggaa gccattttag aagacttgca gaaaattggg aaagaaagtg gccttaaaac 2160
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tgacagcctg tatgagcaca tccaggatta ggataaggta cttaagtacn tgccggccca 2340

ctgtgcactg cttgtgagaa aatggattaa aaactattct tacatttgtt ttgcctttcc 2400
tcctattttt ttttaacctg ttaaactcta aagccatagc ttttgtttta tattgagaca 2460
tataatgtgt aaacttagtt cccaaataaa tcaatcctgt ctttcccatc ttcgatgttg 2520
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tgttctgtgt ccttcctcat gatttccaac cttaatacta ttagtaacca caagttcaag 2640
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tctctatgct tatttacatc ttctactgtt caaactaaga gatttttaaa ttctgaaaaa 2760
ctgcttacaa ttcatgtttt ctagccactc cacaaaccac taaaatttta gttttagcct 2820
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atatctgact tgggagtatt aaaaattggg tctatgacat actgtccaaa aggaatgctg 3000
ttcttaaagc attatttaca gtaggaactg gggagtaaat ctgttcccta cagtttgctg 3060
ctgagctgga agctgtgggg gaaggagttg acaggtgggc ccagtgaact tttccagtaa 3120
atgaagcaag cactgaataa aaacctcctg aactgggaac aaagatctac aggcaagcaa 3180
gatgcccaca caacaggctt attttctgtg aaggaaccaa ctgatctccc ccaccccttgg 3240
attagagttc ctgctctacc ttacccacag ataacacatg ttgtttctac ttgtaaatgt 3300
aaagtcttta aaataaacta ttacagatam ttaaaaaaaa aaaaaaaaaa aaaaaaaaaa 3360
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 3420
aaaaaaaaaa aaanggggg ccnttttaa 3449

<210> 226
<211> 1866
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1859)
<223> n equals a,t,g, or c

<400> 226
caccaatgtt gataaactgg tgaaggacat ttacggagga gactatgaac gatttggcct 60
tcaaggatct gctgtagcat caagctttgg caacatgatg agtaaagaaa agcgagattc 120
catcagcaag gaagacctcg cccgggccac attggtcacc atcaccaaca acattggctc 180
cattgctcgg atgtgtgcgt tgaatgagaa catagacaga gttgtgtttg ttggaaattt 240
tctcagaatc aatatggtct ccatgaagct gctggcatat gccatggatt tttggtccaa 300
aggacaactg aaagctctgt ttttggaaca tgagggttat tttggagccg ttggggcact 360
gttggaactg ttcaaaatga ctgatgayaa gtagagacga gcagtggagg aaacagcctc 420
ccaaaaggac agagaactaa aaaattgctg ctggagaagg tgaaagtcgc tttgggacgg 480
aagccaagcc attatggcag atgaacctgc tggatttgta aataatttaa aatccttcca 540
gatgatcttt tactcttagg ttttgagcta atgattcaaa acgggggaat ataaaaggtt 600
tttttctgt atactgtatt tttttaaaaa aatggtgcag cgtggccaaa cctaccaatt 660
gtatgcatta actttgaaaa gttgtttgat gtttaagaag gacctgatat gtaagcgctg 720
gtcatttttc ttctggggtt tactgatcag tgtggtgatt ttaacttcat ttagtaatta 780
ctctaggaga ttttaccttg acttatattt ttcatgacgt ttcatgattt gctgttggtt 840
tcaaatgaaa ctacaaatct ggcatgtttt actgtgaaca cttttgttat ttgttttgta 900
ccctttttttg tcttgktttt ctgktttagt tgkcttctga aaaaagagtc gttccctctg 960
tttctgtcct cagatgatgt ccctccccct acctgtaacc tttctttgac ataattgttc 1020
atatcaatga aggtgctgac cagctcaata caaagttaag cacaagatct aaagctcttg 1080
aaaatgcccg tgaagagaag actgaatgtg ttaatgaatt taatgagtct ggcaaaagtt 1140
gcaaattata tgcaagtttg tcctatcgct tataaatgta gtgtttcatt ggatttattt 1200

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gtagattaat tgttcatatc aggagattta gggtaagtca tgggttgagg tgtcagatag 1380
taatatctat ttgttttgta catgtatata tctaggaact ttgtaacaac acatctttaa 1440
taatgttaaa ggtttttca tttttaatat tttaaactaa aaactgtact tcaatctcag 1500
tttctaaaat taaaaataat ttatactgat ctatatattt tttctttttg aaagatttca 1560
ttaagactga tgggtaactt tcaaatgagg gtcatgtaca aatattggga tgcatgagat 1620
cccatgatct tgtgtattga gcttattgtt gaaagggatt tttgaaggac agaacaatta 1680
ctccatgatg aatcttcctt tctctgcctt ctgagcaccg tctttaattt ccatatcttc 1740
aagtcttgaa gaagttgatg ttaattgaag aattcacttg tctggttgaa ataaagcctg 1800
tttctgttgt gaaaaaaaaa aaaaaaaact sgtggggggc ccggacccaa ttgccctang 1860
ggagcc 1866

<210> 227
<211> 1064
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (209)
<223> n equals a,t,g, or c

<400> 227
ggcaacagca tggccacaat tttatagcag caaaatgaag caaaaatcaa aggagttagc 60
aaaggcagaa acatatgtgt agtgtgctgc cagcataaga tggaagaact taaagaaggc 120
ctgcggcaaa gagatgagct tattgaggag aagcagcgca tgcagcagaa aatagacacc 180
atgacaaaag aggtgtttga cctccaggng acacttcttt ggaaagataa aaaaattgrg 240
aaacatggct tagttataat ccccgatggc actcccaatg gtgatgtcag tcatgaacca 300
gtggctggag ccatcactgt tgtgtctcag gaagctgctc aggtcttgga gtcagcagga 360
gaagggccat tagatgtaag gctacgaaaa cttgctggag agaaggaaga actactgtca 420
cagattagaa aactgaagct tcagttagag gaggaacgac agaaatgctc caggaatgat 480
ggcacagtgg gtgacctggc aggactgcag aatggctcag acttgcagtt catcgaaatg 540
cagagagatg ccaatagaca aattagcgaa tacaaattta agctttcaaa agcagaacag 600
gatataacta ccttggagca aagtattagc cggcttgagg gacaggttct gagatataaa 660
actgctgctg agaatgctga gaaagttgaa gatgaattga aagcagaaaa acggaagcta 720
caacgagagt tacgaacagc actggacaag attgaggaga tggagatgac caacagccac 780
ctggccaagc ggctggagaa gatgaaggcc aataggacag cacttctggc ccagcagtag 840
gaaaaccacc cttcaacctg ggtgatgctc cttggggccc tacctagagg gactgacttt 900
tgtccattga cacaaacccc ttttagtact gttttgagtt ttgtcattaa aacagccacc 960
tttgtatttt ataatttatg acagratgaa gtcattttga atctacatga atgaacactt 1020
tggattttg ttggagtttg attctagggt agaaccagtc catg 1064

<210> 228
<211> 373
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (329)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<400> 228
gctgcactct caggtattcc ctgctcttac tccaaaaaga tggacccagg tccgaagggg 60
cactgccact gtgggggca tggccatcct ccaggtcact gcgggccacc ccctggccat 120
ggcccagggc cctgcgggcc acccccccac catggcccag ggccctgcgg gccaccccc 180
caccatggtc cagggccctg cgggccaccc cctggccatg gcccagggcc ctgcgggcca 240
cccccccacc atggtccagg gccctgcggg cctccccctg gccatggccc aggtcaccca 300
ccccctggtc cacatcactg aggaagtana anaaaacagg acacaagatg gcaagcctga 360
gagaaattgc cca 373

<210> 229
<211> 2844
<212> DNA
<213> Homo sapiens

<400> 229
tcgacccacg cgtccgcagg tgttcaagat ggcggtagct gaggggttga ccgagagacc 60
cagttgamgg cctttacgaa gtgaaagagg ccgggaatcg ccccctaccc gcttctcgta 120
gtcctgggag cacagcagaa gtgtttttct ttttttaatg aacaagtaaa ccatacaaat 180
tgtcaacatg ggacggagat ctacatcatc caccaagagt ggaaaattta tgaaccccac 240
agaccaagcc cgaaaggaag cccggaagag agaattaaag aagaacaaaa aacagcgcat 300
gatggttcga gctgcagttt taaagatgaa ggatccaaaa cagataatcc gagacatgga 360
gaaattggat gaaatggagt ttaacccagt gcaacagcca caattaaatg agaaagtact 420
gaaagacaag cgtaaaaagc tgcgtgaaac ctttgaacgt attctacgac tctatgaaaa 480
agagaatcca gatatttaca aagaattgag aaagctagaa gtagaatatg aacagaagag 540
ggctcaactt agccaatatt ttgatgctgt caagaatgct cagcatgtgg aagtggagag 600
tattcctttg ccagatatgc cacatgctcc ttccaacatt ttgatccagg acattccact 660
tcctggtgcc cagccaccct ctatcctaaa gaaaacctca gcctatggac ctccaactcg 720
ggcagtttct atccttcctc ttcttggaca tggtgttcca cgtttgcccc ctggcagaaa 780
acctcctggc cctccccctg gtccacctcc tcctcaagtc gtgcagatgt atggccgtaa 840
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gaagaaaaag aagaacatga aggaactgac tcctcttcaa gccatgatgc ttcgtatggc 1200
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agatgattct gatgactctg aagcagaaaa gcaatcacaa aagcagcata aagaggaatc 1320
ccattctgat ggcacatcca ctgcttcttc acagcagcag gctccgccgc agtctgttcc 1380
tccttctcag atacaagcac ctcccatgcc aggaccacca cctcttggac caccacctgc 1440
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tcctccattc ctgagaccac ctggaatgcc aggactccga gggcccttac cccgactttt 1560
acctccagga ccaccaccag gccgaccccc tggccctccc ccaggtccac ctccaggtct 1620
gcctcctggt ccccctcctc gtggaccccc accaaggcta cctcccccctg cacctccagg 1680
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ccccccctggg ctgttcccac cagctccctt gccaaaccct ggggttttaa gtgccccacc 1800
caacttgatt cagcgaccca aggcggatga tacaagtgca gccaccattg agaagaaagc 1860
cacagcaacc atcagtgcca agccacagat cactaatccc aaggcagaga ttactcgatt 1920
tgtgcccact gcactgagag tacgtcggga gaataaaggg gctactgctg ctccccaaag 1980
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gatactctgt gttactgata atatgtaaac ataataccta ttttatggga caggaaaaag 2760
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tcttactgga aaactgggta aaaa 2844

<210> 230
<211> 1798
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (31)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (501)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (1798)
<223> n equals a,t,g, or c

<400> 230
ngcaaatata cgtgnacact tatnaaaagt nacgcctgac acgtgaccgg ttccgggaat 60
tcccgggtcg acccacgcgt ccggcccagc actagaagtc ggcggtgttt ccattcggtg 120
atcagcactg aacacagagg actcaccatg gagtttgggc tgagctgggt tttcctcgtt 180
gctcttttaa gaggtgtcca gtgtcaggtg cagctggtgg agtctggggg aggcgtggtc 240
cagcctggga ggtccctgag actctcctgt gcagcstctg gattcacctt cagtagctat 300
ggcatgcact gggtccgcca ggctccaggc aaggggctgg agtgggtggc agttatatsr 360
tatgatggaa gtaataaata ctatgcagac tccgtgaagg gccgattcac catctccaga 420
gacaattcca agaacacgct gtatctgcaa atgaacagcc tgagagctga ggacacggct 480
gtktattact gtgcgaraga ngttactatg gttcggaaag catctactac tactttgact 540
ctggggccag ggaacmctgg tcaccgtctc ctcagcctcc accaagggcc catcggtctt 600
ccccctggca ccctcctcca agagcacctc tgggggcaca gcggccctgg gctgcctggt 660
caaggactac ttccccgaac cggtgacggt gtcgtggaac tcaggcgccc tgaccagcgg 720
cgtgcacacc ttcccggctg tcctacagtc ctcaggactc tactccctca gcagcgtggt 780
gaccgtgccc tccagcagct tgggcaccca gacctacatc tgcaacgtga atcacaagcc 840
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caccgtcctg caccaggact ggctgaatgg caaggagtac aagtgcaagg tctccaacaa 1200
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ctgcctggtc aaaggcttct atcccagcga catcgccgtg gagtgggaga gcaatgggca 1380
gccggagaac aactacaaga ccacgcctcc cgtgctggac tccgacggct ccttcttcct 1440
ctayagcaag ctcaccgtgg acaagagcag gtggcagcag gggaacgtct tctcatgctc 1500
cgtgatgcat gaggctctgc acaaccacta cacgcagaag agcctctccc tgtcyccggg 1560
taaatgagtg cgacggccgg caagcccccg ctccccgggc tctcgcggtc gcacgaggat 1620
gcttggcacg taccccgtst acatacttcc crggcrccca gcatggaaat aaagcaccca 1680
scrctgccct gggcccctgc aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1740
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaawaa aaaaaaaaaa aaaaaaan 1798

<210> 231
<211> 1823
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (82)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1593)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1714)
<223> n equals a,t,g, or c

<400> 231
gtcgcctgcc acccgcttcg gccacggcca gacgcccgcg gccttcctca gcgctctgct 60
gccctcgcag ccgccgccgg gncggtcaac gccctggggc tgcccaaggg tgtcaccccc 120
gcagatttcc aaagaaggcc agtagaactg ctagaatagc ctccgatgag gaaattcaag 180
gcacaaagga tgctgttatt caagacctgg aacgaaaact tcgcttcaag gaggacctcc 240
tgaacaatgg ccagccgagg ttaacatacg aagaaagaat ggctcgtcga ctgctaggtg 300
ctgacagtgc aactgtcttt aatattcagg agccagaaga ggaaacagct aatcaggaat 360
acaaagtctc cagctgtgaa cagagactca tcagtgaaat agagtacagg ctagaaaggt 420
ctcctgtgga tgaatcaggt gatgaagttc agtatggaga tgtgcctgtg gaaaatggaa 480
tggcaccatt ctttgagatg aagctgaaac attacaagat ctttgaggga atgccagtaa 540
ctttcacatg tagagtggct ggaaatccaa agccaaagat ctattggttt aaagatggga 600
agcagatctc tccaaagagt gatcactaca ccattcaaag agatctcgat gggacctgct 660
ccctccatac cacagcctcc accctagatg atgatgggaa ttatacaatt atggctgcaa 720
accctcaggg ccgcatcagt tgtactggac ggctaatggt acaggctgtc aaccaaagag 780
gtcgaagtcc ccggtctccc tcaggccatc ctcatgtcag aaggcctcgt tctagatcaa 840
gggacagtgg agacgaaaat gaaccaattc aggagcgatt cttcagacct cacttcttgc 900
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cgtcacgtga tgccggcatc tacacatgta tagctaccaa ccgagcagga cagaactcat 1140
tcagcctgga gcttgtggtt gctgctaaag aagcacacaa accccctgtg tttattgaga 1200
agctccaaaa cacaggagtt gctgatgggt acccagtgcg gctggaatgt cgtgtattgg 1260
gagtgccacc acctcagata ttttggaaga aagaaaatga atcactcact cacagcactg 1320
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aaaaagtacg gccctcagcc agtcgctatg cagcactttc ggaccaggga ctagacatca 1560
aagcagcgtt ccaacctgag gccaacccat ctnacctgac actgaatact gccttggtag 1620
aaagtgagga cctgtaatcc agcattcttg ktaaagctga aacacttgaa acagscattg 1680
scttgaccaa catattcctt tgtcacatta tgtnaaaggc agaamcatac ctttgctatt 1740
agaaattaaa aaaacaccaa aatatatttt ctacttgaat accaacttag tttaagtaga 1800
taatgctaat acaaatatac aca 1823

<210> 232
<211> 970
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (936)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (960)

<223> n equals a,t,g, or c

<400> 232
aattcgggac gagggcagcc cgcttgccaa tcagagcgcg gctgagcggc cccgcagcca 60
acccccgagg agcggccggc tggcgtccgc cgcgcccagg agttggggat gtcctacaaa 120
cccatcgccc ctgctcccag cagcacccct ggctccagca cccctgggcc gggcaccccg 180
gtccctacag gaagcgtccc gtcgccgtcg ggctcagtgc caggagccgg cgctcctttc 240
agaccgctgt ttaacgactt tggaccgcct tccatgggct acgtgcaggc gatgaagcca 300
cccggcgccc agggctccca gagcacctac acggacctgc tgtcagtcat agaggagatg 360
ggcaaagaga tccggcctac ctatgctggc agcaagagcg ccatggagcg cytgaagaga 420
ggaagcgcct cggcctcagc gtctggacct atccggccac tgcagagcac ccgcttctcc 480
ctggccttca tcccgagttg cactaaccat cctgggcttc ctgtcctgtg tcccttggtg 540
ggtcccctcc aggaaccaag gagtggccct ccaggtggca gcactaagga cacccccca 600
caacaagagt tagcagcgag gtccccatga gtcccaccca tgacctgccg acagtgttgc 660
ccaccggaac ttttgtggcc cctaccgctc agcccttccc agcacttctc ccactttgtc 720
ccgagcctcc ttctccccca gcaggggcac aggcctggca cctccctgcc ttgtgtcctg 780
agccatagtg actcttttat ctgtgtgtct tttgctaaat atgccctttt tatattaata 840
aaagatgatt tggagttgtg ctctcaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 900
aaaaaaaggg cggccgctct agaggatcca tgcttnacgt acgcgtgcat gcgtacgtcn 960
ttgctcttct 970

<210> 233
<211> 967
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (923)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (926)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (955)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (957)
<223> n equals a,t,g, or c

<400> 233
ggcagagcac ttcctggcca ggaaacctga gcggtgagac tcccagctgc ctacatcaag 60
gccccaggac atgcagaacc ttcctctaga acccgaccca ccaccatgag gtcctgcctg 120
tggagatgca ggcacctgag ccaaggcgtc cagtggtcct tgcttctggc tgtcctggtc 180
ttctttctct tcgccttgcc ctcttttatt aaggagcctc aaacaaagcc ttccaggcat 240

caacgcacag agaacattaa agaaaggtct ctacagtccc tggcaaagcc taagtcccag 300
gcacccacaa gggcraggag gacaaccatc tatgcagagc cagygccaga gaacaatgcc 360
ctcaacacac aaacccagcc caaggcccac accaccggag acagaggaaa ggaggccaac 420
caggcaccgc cggaggagca ggacaaggtg ccccacacag cacagagggc agcatggaag 480
agcccagaaa aagagaaaac catggtgaac acactgtcac ccagagggca agatgcaggg 540
atggcctctg gcaggacaga ggcacaatca tggaagagcc aggacacaaa gacgacccaa 600
ggaaatgggg gccagaccag gaagctgacg gcctccagga cggtgtcaga gaagcaccag 660
ggcaaagcgg caaccacagc caagacgstc attyccaaaa gtcagcacag aatgctggct 720
yccacaggag cagtgtcaac aaggacgaga cagaaaggar tkaccacagc agtcatccca 780
cctaaggaga agaaacctca ggccacccca ccccctgccc ctttccagag ccccacgacg 840
cagagaaacc aaagactgaa gggcggcaac ttcaaatctg agcctcggtg ggattttgag 900
gaaaaataca agcttcgaaa tanganggct tcagacgact tggccttgac tctgngnaga 960
tcaaaag 967

<210> 234
<211> 2163
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1140)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1157)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1158)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1166)
<223> n equals a,t,g, or c

<400> 234
gcccgagcct gcgatggctc ttccccaccg gaggctcagt ccgtggctgc gtcaaaggca 60
tcaaggccct gggcaagtat gtggacctca agcggctgaa cacgacaggc gtgacgccgg 120
ctgcacygcc gacctgctgg tggggcgcgc catgactttc catggccacg gcttccttcg 180
cctggcgctc tcgaacgtgg caccgctcac tggcaacgtc tactccggct tcggcttcca 240
cagcgcccag gacagtgccc tgctctacta ccgggcgtcc ccggatgggc tatgccaggt 300
gtccctgcag cagggccgtg tgagcctaca gctcctgagg actgaagtga aaactcaagc 360
gggcttcgcc gatggtgccc cccattacgt cgccttctac agcaatgcca cgggagtctg 420
gctgtatgtc gatgaccagc tccagcagat gaagccccac cggggaccac cccccgagct 480
ccagccgcag cctgaggggc ccccgaggct cctcctggga ggcctgcctg agtctggcac 540
catttacaac ttcagtggct gcatcagcaa cgtcttcgtg cagcggctcc tgggcccaca 600
gcgcgtattt gatctgcagc agaacctggg cagcgtcaat gtgagcacgg gctgtgcacc 660

cgccctgcaa gcccagaccc cggcctggg gcctagagga ctgcaggcca ccgcccggaa 720
ggcctcccgc cgcagccgtc agcccgcccg gcatcctgcc tgcatgctgc cccacacct 780
caggaccacc cgagactcct accagtttgg gggttccctg tccagtcacc tggagtttgt 840
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ccagagccgc cagcgctccc ggcctggcgc tggcacaagg tctccgtgcg ctgggagaag 1080
aaccggatcc tgctggtgac ggacggggcc cgggsctgga gccaggaggg gccgcaccgn 1140
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agcagccaca gctccaaact tccggtgacc gtcgggttca gcggctgtgt gaagagactg 1260
aggctgcacg ggaggcccct gggggccccc acacggatgg caggggtcac accctgcatc 1320
ttgggccccc tggaggcggg cctgttcttc ccaggcagcg ggggagttat cactttagac 1380
ctcccaggag ctacactgcc tgatgtgggc ctggaactgg aggtgcggcc cctggcagtc 1440
accggactga tcttccactt gggccaggcc cggacgcccc cctacttgca gttgcaggtg 1500
accgagaagc aagtcctgct gcgggcggat gacggagcag gggagttctc cacgtcataa 1560
cccgcccctc agtgctgtgt gatggccagt ggcaccggct agcggtgatg aaaagcggga 1620
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tctgaagatg gtttaagtta tagcttctta aacgaaagaa taaaatactg caaaatgttt 2040
ttatatttgg cccttccacc catttttaat tgtgagagat ttgtcaccaa tcatcactgg 2100
ttcctcctta aaaattaaaa agtaacttct gtgtaaaaaa aaaaaaaaaa aaaaaaaaaa 2160
aaa 2163

<210> 235
<211> 1321
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1313)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1320)
<223> n equals a,t,g, or c

<400> 235
gcgcgacgcc gccacctccg gaacaagcca tggtggcggc gacggtggca gcggcgtggc 60
tgctcctgtg ggctgcggcc tgcgcgcagc aggagcagga cttctacgac ttcaaggcgg 120
tcaacatccg gggcaaactg gtgtcgctgg agaagtaccg cggatcggtg tccctggtgg 180
tgaatgtggc cagcgagtgc ggcttcacag accagcacta ccgagccctg cagcagctgc 240
agcgagacct gggcccccac cacttcaacg tgctcgcctt ccccctgcaac cagtttggcc 300
aacaggagcc tgacagcaac aaggagattg agagctttgc ccgccgcacc tacagtgtct 360
cattccccat gtttagcaag attgcagtca ccggtactgg tgcccatcct gccttcaagt 420
acctggccca gacttctggg aaggagccca cctggaactt ctggaagtac ctagtagccc 480

cagatggaaa ggtggtaggg gcttgggacc caactgtgtc agtggaggag gtcagacccc 540
agatcacagc gctcgtgagg aagctcatcc tactgaagcg agaagactta taaccaccgc 600
gtctcctcct ccaccacctc atcccgccca cctgtgtggg gctgaccaat gcaaactcaa 660
atggtgcttc aaagggagag acccactgac tctccttcct ttactcttat gccattggtc 720
ccatcattct tgtgggggaa aaattctagt attttgatta tttgaatctt acagcaacaa 780
ataggaactc ctggccaatg agagctcttg accagtgaat caccagccga tacgaacgtc 840
ttgccaacaa aaatgtgtgg caaatagaag tatatcaagc aataatctcc cacccaaggc 900
ttctgtaaac tgggaccaat gattacctca tagggctgtt gtgaggatta ggatgaaata 960
cctgtgaaag tgcctaggca gtgccagcca aataggaggc attcaatgaa catttttgc 1020
atataaamca aaaaataact tgttatcaat aaaaacttgc atccaacatg aatttccagc 1080
cgatgataat ccaggccaaa ggtttagttg ttgttatttc ctctgtatta ttttcttcat 1140
tacaaaagaa atgcaagttc attgtaacaa tccaaacaat acctcacgat ataaaataaa 1200
aatgaaagta tcctcctcaa aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa 1260
aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa aangggggn 1320
c 1321

<210> 236
<211> 683
<212> DNA
<213> Homo sapiens

<400> 236
tcgacccacg cgtccgagca gctgctgcag ggcccatggc ggacacccag tacatcctgc 60
ccaatgacat cggcgtgtct agcctggact gccgtgaggc cttccgcctg ctgtcaccca 120
cagagcgcct ctatgcctac cacctgtccc gtgccgcctg gtacggaggc ctggctgtgc 180
tgcttcagac ctcccctgag gcccccctaca tctatgctct gctcagccgc ctcttccgcg 240
cccaggaccc cgaccagctg cgccaacatg ccctggctga aggccttacc gaggaggagt 300
atcaggcgtt cctggtctat gccgcgggtg tttactccaa catgggcaac tacaagtcct 360
ttggtgacac caagtttgtt cccaacttgc ccaaggaaaa gctggaacgg gtgatcctag 420
ggagtgaggc tgctcagcag cacccagaag aagtcagggg cctctggcak acctgcgggg 480
agcttatgtt ctctctggag ccaaggcttc gacacctcgg actggggaag gagggaatca 540
ccacctattt ctctgggaat tgtaccatgg aagatgccaa attggccmag atttctggac 600
tcacagaacc tyartgccta caacaaccgg stcttyaaag aagtcsatgg garaaaggaa 660
rccctamtac gaaggtgcgg gtt 683

<210> 237
<211> 2115
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2112)
<223> n equals a,t,g, or c

<400> 237
attcccgggt cgacccacgc gtccgggctc cggcaaccgc tccggcaacg ccaaccgctc 60
cgctgcgcgc aggctgggct gcaggctctc ggctgcagcg ctggggtctt gctttgtctc 120
ccaggctggt gtgcagtggt gcgaccacgg ctcacggcag cctcagccac ccagatgtaa 180
gcgatctggt tcccacctca gcctcccgag tagtggatct aggatccggc ttccaacatg 240
tggcagctct gggcctccct ctgctgcctg ctggtgttgg ccaatgcccg gagcaggccc 300

tctttccatc ccstgtcgga tgagctggtc aactatgtca acaaacggaa taccacgtgg 360
caggccgggc acaacttcta caacgtggac atgagctact tgaagaggct atgtggtacc 420
ttcctgggtg ggcccaagcc accccagaga gttatgttta ccgaggacct gaagctgcct 480
gcaagcttcg atgcacggga acaatggcca cagtgtccca ccatcaaaga gatcagagac 540
cagggctcct gtggctcctg ctgggccttc ggggctgtgg aagccatctc tgaccggatc 600
tgcatccaca ccaatgcgca cgtcagcgtg gaggtgtcgg cggaggacct gctcacmtgc 660
tgtggcagca tgtgtgggga cggctgtaat ggtggctatc ctgctgaagc ttggaacttc 720
tggacaagaa aaggcctggt ttctggtggc ctctatgaat cccatgtagg gtgcagaccg 780
tactccatcc ctccctgtga gcaccacgtc aacggctccc ggccccccatg cacgggggag 840
ggagataccc ccaagtgtag caagatctgt gagcctggct acagcccgac ctacaaacag 900
gacaagcact acggatacaa ttcctacagc gtctccaata gcgagaagga catcatggcc 960
gagatctaca aaaacggccc cgtggaggga gctttctctg tgtattcgga cttcctgctc 1020
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gccgtgggcc tgtcgtgcca gtcctggggg cgagatcggg gtagaaatgc atttattct 1320
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gagagatggt gttgggagcc ctttggagaa cgccagtctc ccaggccccc tgcatctatc 1740
gagtttgcaa tgtcacaacc tctctgatct tgtgctcagc atgattcttt aatagaagtt 1800
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tgctagtttt acagattgcc tcctaatgac gcggctcaaa aggaaaccaa gtggtcagga 1920
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aataaaaggt ttctccaact tgaaaaaaaa aaaaaaaaaa aaamwmgggg ggggcccgta 2100
cccattggcc tntgg 2115

<210> 238
<211> 1642
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1633)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1638)
<223> n equals a,t,g, or c

<400> 238
taagcaggca ctagaggacc tggagcgcac atcaggccgt ggcaccctga tgtcgccacc 60
atgctcaaca tccttgcttt ggtgtatcgt gaccagaata agtataagga agctgcccac 120
ctgctgaatg atgcccttag catccgggag agcaccttgg gacctgacca tcctgctgtg 180

gctgccacac tcaacaattt ggctgtgctc tatggcaaaa ggggcaagta caaggaggca 240
gagcctctgt gccagcgggc actggagatt cgagaaaagg tcctgggcac gaatcatcca 300
gatgtggcaa aacagctgaa caacctggcc ctcttgtgcc aaaaccaggg caagtatgag 360
gccgtggaac gctactacca gcgagcactg gccatctacg aggggcagct ggggccggac 420
aaccctaatg tagcccggac caagaacaac ctggcttcct gttacctgaa acagggcaaa 480
tatgctgagg ctgagacact atacaaagag atcctgaccc gtgcccatgt acaggagttt 540
gggtctgtgg atgatgacca caagcccatc tggatgcatg cagaggagcg ggaggaaatg 600
agcaaaagcc ggcaccatga gggtgggaca ccctatgctg agtatggagg ctggtacaag 660
gcctgcaaag tgagcagccc cacagtgaac actactctga gaaacctggg agctctgtat 720
aggcgccagg gaaagctgga ggctgctgag accctggagg aatgtgccct gcggtcccgg 780
agacagggca ctgaccctat cagccagacg aaggtggcag agctgcttgg ggagagtgat 840
ggtagaagga cctcccagga gggccctgga gacagtgtga aattcgaggg aggtgaagat 900
gcttctgtgg ctgtggagtg gtccggggat ggcagtggga ccctgcagag gagtggctct 960
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gggactgagc ctcggccctc cagcagcaac atgaagcgag cagcctcctt gaactatctg 1080
aaccaaccta gtgcagcacc cctccaggtc tcccgggggcc tcagtgccag caccatggac 1140
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acagccctca cagcattccc cattgctcct ggctcttccc caccccctagg tgggacagtg 1260
aaggggagca gtttaaccag aagattgctg ctgcccttag ggtctcagct ccctcctcag 1320
gaatccctct taggaaggac cctcaggaca ccctctctgc accctgtggt cctctagagt 1380
agctagctct gaggccccaa ggtgggtaca aagcaggtat ggccctcaga gatgcagcct 1440
gctgctggct tttcagtcag agggttgggg gctggccagc caagctgcct tgccctggcc 1500
gctcttactc cctccctctg ctgtctcact tcaggtccat gtatttcact tttcttaaat 1560
aaaagaatca ggtaacctta aaaaaaaaaa aaaaaaaaaa cttggggggg gccccgaacc 1620
caatttgccc canagggngg cg 1642

<210> 239
<211> 468
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (461)
<223> n equals a,t,g, or c

<400> 239
gcggacgcgt gggcctggtc tcagtatggc gctgtcctgg gttcttacag tcctgagcct 60
cctacctctg ctggaagcca gatcccattg tgtgccaacc tagtaccggt gcccatcacc 120
aacgccaccc tggaccggat cactggcaag tggttttata tcgcatcggc ctttcgaaac 180
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aagacagagg acacgatctt tctcagagag taccagaccc gccagaacca gtgcttctat 300
aactccagtt acctgaatgt ccagcgggag aatgggaccg tctccagata cgagggaggc 360
cgagaaacat gttgctcacc tgctgttcct tagggacacc aagaccttga tgtttggtty 420
ctacctggac gatgagaaga actgggggtg tctttctatg ntgacaag 468

<210> 240
<211> 1329
<212> DNA
<213> Homo sapiens

<400> 240
tacatcttat aaaacctaac tggcatttaa aaaatactgt ggccgggcgt ggtggctcat 60
gcctgtaatc ccagcacttt gggaggccga ggtgggagga ttgcttgagt ccaggaattt 120
gagaccagcc tggacaacac agtgagacct catctctatc aaaaaataaa aattagctag 180
atgtggtggc atgagcctgt gttcccagct gcttaggagg ctgaagcagg aggattgatt 240
gagcctgcga ggccaaggct gcagcaggct gtgattgcac cactgcactt cagcttgggc 300
aacagagcaa gaccctgtct ccgaaacaaa taaaaaatac tgtaataaaa gtacttataa 360
acatactaat cctctttcag gaccctaaag ttgcaggtta gtaggtcttc aaggacaaat 420
ctgtaagttt cttatttctg tagtgcaagt aaaatttcac tttttgaaac tatagagaga 480
tccctttctg attagcctac agaacttaaa gtgagggaac catttcctct cacagacaaa 540
gaggcctggg atattaggac tttggggttt gagagcatca tggggcagac agatggtgga 600
tggtctggac aagaagcgag taagccactg cggttggtca tactgaaggg aattgatggc 660
aagaggatcc cctgagcaag tcagaagtta ctctcatcag tcgttcatgg tcacaacctg 720
aggtactctg ctgagtgggc aaggctgaag aagaggcctg tggaatgcag cattacctgc 780
tggacagagc agggcaggca gttctatgcc ttggagctcc tgactgcagg gactctgtcc 840
ccacactcar aaagactcag ctcactcaat gagagaatgt gatttacttt atagaacgta 900
taatcaactt tgttgaataa tttgttctat taaggctgtc taaagtatgt gatgtcttca 960
tcatagtatg aagtgttgaa aattaataac gagcctagtt taggaaaaag ctgcttaaaa 1020
ctgtggctct aagagagtaa tcataaaata ccttagataa aattgcacta tggaattttc 1080
attgagtatg tttaaattat tggcttgtct actaatacac atctgcttca aaatgaacat 1140
atttcataaa attggcatca attttaatga cgctcctggt atggaacctc agatataccc 1200
tattggagac aatcctttga tcataaattc tccccaacta taaatcattt tatgtcttta 1260
tcawaaaaaa aaaaaggaat tcgatatcaa gcttatcgat accgtcgacc tcgagggggg 1320
gcccgtacc 1329

<210> 241
<211> 1652
<212> DNA
<213> Homo sapiens

<400> 241
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gagcaataat atattgtgct aacgttcagg catcctatta ctgagaaata agggaaaatg 120
agtgtaaagt acaactaaga gtctcggcta cagggaaaaa taccatcagt taaatatcca 180
tagtcctaga gcatttatgt aaaactgcaa tttgaatcct gcaatacatt ttggcttttt 240
cctcagtgat accatgtgtg ggaagttgtt ctgtcaaggt gggtcggata atttgccctg 300
gaaaggacgg atagtgactt tcctgacatg taraacattt gatcctgaag acacaagtca 360
agaaatargc atggtggcca atggaactaa gtgtggcgat aacaaggttt gcatkaatgc 420
agaatgtgtg gatattgaga aagcctacaa atcaaccaat tgctcatcta agtgcaaagg 480
acatgctgtg tgtgaccatg agctccagtg tcaatgtgag gaaggatgga tccctcccga 540
ctgcgatgay tcctcagtgg tcttccactt ctccattgtg gttggggtgc tgttcccaat 600
ggcggtcatt tttgtggtgg ttgctatggt aatccggcac cagagctcca gagaaaagca 660
gaagaaagat cagaggccay tatctaccac tggcaccagg ccacacaaac agaagaggaa 720
accccagatg gtaaaggctg ttcaacccca agagatgagt cagatgaagc cccatgtgta 780
tgatctgcca gtagaaggca atgagccccc agcctctttt cataaagaca caaacgcact 840
tccccctact gttttcaagg ataatccaat gtctacacct aaggactcaa atccaaaagc 900
atgaagcaac agctaagcaa gaactaatgg ctaaattatc aacttggaaa actggaaaat 960
ctggatggca gagaaatata ctatctcacc agtatttgct ctcgactcaa gaaggttaac 1020
attttctgat tcatgttaga ctttgaagag actaaagaaa attttcaaga ggaacatatg 1080
cctgagaacc tttgcatgaa tttaaaattt caattatcca ttcttataag aaggaagatg 1140
attgtaaaga aatatctccg aagttaaaat ctgtaatagg aattgattca ttctctaatg 1200

aaaacaaaac ataaaaacat cacactaatc ttggaggaat aagaaaaatt gtacatccat 1260
taaatgtaca attgattgca acatcttgat tgttttaacc attaacttgt caaattacaa 1320
tcacagttaa gaaaatgatg taaaattctg ttttgtggat ctctttccta gattagcttc 1380
tgaaatcatt attagctata tcatttgagg ttttctacaa tttggtataa ctaagaattt 1440
aaaaatgttt tatcatatat atttgtataa ttaattactg gcatggttaa agtggttttc 1500
actttttaaa tggagaaaat ttcagttaaa ttaataggat aaaccaggtt gcgaactggt 1560
gacctgtagg ccatgtttgc actgcaaata tatttggtct gaatgatatt gaaaaaaaaa 1620
aaaaaaaaaa ctcgaggggg ggcccgtacc ca 1652

<210> 242
<211> 1946
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (84)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (538)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1932)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1941)
<223> n equals a,t,g, or c

<400> 242
ggcacgagta caaggtggcg gcgctgggmc tggccaccgg cwtcgtcttg gtgctgctgc 60
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ggcggcggag gcgcggggag ctgccctgcg acgactacgg ctatgcgcca cccgagacgg 180
agatcgtgcc gcttgtgctg cgcggccacc tcatggacat cgagtgcctg gccagcgacg 240
gcatgctgct ggtgagctgc tgcctggcag gccacatctg cgtgtgggac gcgcagaccg 300
gggattgcct aacgcgcatt ccgcgcccag gcaggcagcg ccgggacagt ggcgtgggca 360
gcgggcttga ggctcaggag agctgggaac gactttcaga tggtgggaag gctggtccag 420
aggagcctgg ggacagccct cccctgagac accgcccccg gggccctccg ccgccttccc 480
tcttcgggga ccagcctgac ctcacctgct taattgacac caacttttca gcgcagcntc 540
ggtcctcaca gcccactcag cccgagcccc ggcaccgggc ggtctgtggc cgctctcggg 600
actccccagg ctatgacttc agctgcctgg tgcagcgggt gtaccaggag gaggggctgg 660
cggccgtctg cacaccagcc ctgcgcccac cctcgcctgg gccggtgctg tcccaggccc 720
ctgaggacga gggtggctcc cccgagaaag gctccccttc cctcgcctgg gcccccagtg 780
ccgagggttc catctggagc ttggagctgc agggcaacct catcgtggtg gggcggagca 840
gcggccggct ggaggtgtgg gacgccattg aaggggtgct gtgctgcagc agcgaggagg 900
tctcctcagg cattaccgct ctggtgttct tggacaaaag gattgtggct gcacggctca 960

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acggttccct tgatttcttc tccttggaga cccacactgc cctcagcccc ctgcagttta 1020
gagggacccc agggcggggc agttcccctg cctctccagt gtacagcagc agcgacacag 1080
tggcctgtca cctgacccac acagtgccct gtgcacacca aaaacccatc acagccctga 1140
aagccgctgc tgggcgcttg gtgactggga gccaagacca cacactgaga gtgttccgtc 1200
tggaggactc gtgctgcctc ttcacccttc agggccactc aggggccatc acgaccgtgt 1260
acattgacca gaccatggtg ctggccagtg gaggacaaga tggggccatc tgcctgtggg 1320
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ttacctgtac cacctcctgt gtcatcagca gtggcctgga tgacctcatc agcatctggg 1440
accgcagcac aggcatcaag ttctactcca ttcagcagga cctgggctgt ggtgcaagct 1500
tgggtgtcat ctcagacaac ctgctggtga ctggcggcca gggctgtgtc tccttttggg 1560
acctaaacta cggggacctg ttacagacag tctacctggg gaagaacagt gaggcccagc 1620
ctgcccgcca gatcctggtg ctggacaacg ctgccattgt ctgcaacttt ggcagtgagc 1680
tcagcctggt gtatgtgccc tctgtgctgg agaagctgga ctgagcgcag ggcctccttg 1740
cccaggcagg aggctggggt gctgtgtggg ggccaatgca ctgaacctgg acttgggga 1800
aagagccgag tatcttccag ccgctgcctc ctgactgtaa taatattaaa ctttttttaaa 1860
aaaccataaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1920
aaaaaaaaaa anaaaaaaaa nggggg                                     1946
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<210> 243
<211> 518
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (298)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (472)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (494)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (500)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (507)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (513)

<223> n equals a,t,g, or c

<400> 243
ggacgcgtgg gcagctgcag aaatccaaaa atattgacct tataagctca agatgctgta 60
tgctgggttt ttacaaggat attcggtatt tgatgaaacc cagttaggca tgacatattc 120
cccttctccc cattcctacc tctcttttat taaaaatttt atagttacag tgtctatgtt 180
gcccagcctg gtcttgaacc ctttggctca agtgatccac ctgccttggc ctcccaaagt 240
gctgggatta cagatgggag ccatcgtgtc tggcccattc ctgcctctta aagccctnca 300
cccaacaggc agacttgaga ctcaaaccgt ggtcccagct cttgcatcag gggtagtttg 360
ggaattcaaa atctttcaaa ctggggtaaa aaccaggccc agaattcaga gttcaaccaa 420
caagctttcc aagaatgccg gcccaaagga aaaaagtggg ttcttggaaa anccggggaa 480
aagggggggtg caanccctttn gggagtnaca agngcttg 518

<210> 244
<211> 621
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (460)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (569)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (593)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (609)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (612)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (621)
<223> n equals a,t,g, or c

<400> 244
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tcactttact tgtatatcag atatataagc tatgaacaca agtttgtagt aaaagtatct 120

tctgtctggg caatggctca cacctgtaat tccaacactt tggggggctc aggtgggagg 180
atttctagtc cccaggagtt tgagaccagc ctgggcaata aactagaccc catgtctcta 240
aaaaatgtaa aaaacatcaa gaggctgagt caggaggatc atttgagctt aggagttcaa 300
ggctgcagta agttatgatt gtgccactgc attccagcct gggtgacaag agtgagaccc 360
tgacccaaaa aaagtatctt ctgataaagt ggcatttgaa aattgcagaa aattttaata 420
ttttttcttt taatattaag aactttattg atctctctan gacaccttgg tgaggaaatt 480
aatggcactt ttcttgacat tcaacctggg actttgggtg attctgggtt ctggtgaatt 540
taaagtttca acatttcttt ggggcaccnt ttacaagggg tttggccctt ggnaccttat 600
gaccggtcna anggtccaaa n 621

<210> 245
<211> 480
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (340)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (431)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (447)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (460)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<400> 245

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gcgcctgtag tcccagctac tcgggaggct gaggcgggag tatgacttga acctgggagg 120
cggaggttgc agtgagctga gattgtgcca ctgcactcca gcctgggtga cagagcaaga 180
ctccgtttca gaaaaaaaaa aaaactgtgt ctcatcattg cactgttctt ttaaaattgt 240
atatatatat ttttcttgca gatacactct ggaaatgatt aaactagtac cacataatga 300
aagtgcatgg aactatttga aagggatttt gcaggatcgn ggtctttcca aatatcccaa 360
tctgtnaaat caattacctt gatttacaac caagtcaaag ttccccctac ctaattgcct 420
ttcttgggga naccatgaag acatgcnaga aaaccagngn gacaataang gagacatcct 480
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<210> 246
<211> 451
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (102)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (107)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (110)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (135)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (198)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (287)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (309)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (314)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (319)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (324)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (328)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (330)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (342)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (349)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (379)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (434)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (438)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (439)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (451)
<223> n equals a,t,g, or c

<400> 246
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caccgtatta gccaggatgg tctcgatctc ctgacctcgt gntccgngcn cctcggcctc 120
ccaaagtgct ggganttaca ggcgtgagcc accgtgcccg gcctgattct cttaaaattg 180
aagaggtgct gccaaggnct tcagatctaa cgcagatgca tagaccttgt tcatggtact 240
tgttcagcct gtgctgggga gccgtggttc cgagtttcct gggaggntga cagggtgaag 300
ccaccgtanc cacnacccnc cganttcncn tncgctttct tntcagcant aggattaaag 360
ggattttgaa tgaagcaant tttaaggggt aggaggtgtt ggggaaaata aataattatt 420
caagtaaggc cttngggnnt ttagggggtt n 451

<210> 247
<211> 530
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (404)
<223> n equals a,t,g, or c

<400> 247
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aacttctcct ggtctctcag ctggggccac tgtcggcatc atgattggag tgctggttgg 120
ggttgctctg atatagcagc cctggtgtag tttcttcatt tcaggaagac tgacagttgt 180
tttgcttctt ccttaaagca tttgcaacag ctacagtcta aaattgcttc tttaccaagg 240
atatttacag aaaagactct gaccagagat cgagaccatc ctagccaaca tcgtgaaacc 300
ccatctctac taaaaataca aaaatgagct gggcttggtg gcgcacacct gtagtcccag 360
ttactcgggg aagctgaggc aggagaatcg cttgaacccg ggantggaga ttgcagtgag 420
cccagatcgc accactgcac tccagtctgg ccaacagagc aagactccat ctcaaaaaag 480
aaaagaaaag gagactctga cctggtactc ttgaatacaa gtttctgata 530

<210> 248
<211> 635
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (217)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (224)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (235)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (408)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (437)
<223> n equals a,t,g, or c

<220>
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<222> (484)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (513)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (516)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (560)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (568)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (576)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (603)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (635)
<223> n equals a,t,g, or c

<400> 248
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ctgggagatg gaggttgcag tgagctgaga tcatgccact gcactccagc ctgggcaaca 120
gagcaagact ctgcctcaaa aaaaaattaa aataaattta aatacaaaaa aaaatagcca 180
ggtgtggggt gcatgcctgg aatcccagct acttganaag gctnaaggca ccaanaattg 240
cttgaaccca ggaggtggag gttgcagtga gccaagatca caggagccac tgcactccag 300
cctgggtgac agagtgagac tctgtctcaa aaaaaaaatt aaataaatta ttataacctt 360
tcaaaaatgc tgtgtgcatt ttcatgttct tttttttaac attactgnca ctctccctaa 420
tgaaatggac ttcaaanaag cagtattttg ttaaataaat acataacctc attctgaata 480
atgnccctca ttttgactat aactgggctt ggnttnaaaa gcaaaattta acaaaaattt 540
aatccccttc caaaggaacn ttgggtancc tgggtnaaaa aatgccaaat ggggtacttt 600
tanttaaaat ttggaattta acatcttttt tggan 635

<210> 249
<211> 360

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (118)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (280)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (282)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (305)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (360)
<223> n equals a,t,g, or c

<400> 249
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cccaggttta agggtggttt atggccatac gtggaggttt tttgttgttg tttttganac 120
tgagtttcac tcttgttgcc caggctggag tgcaatggca ccatctcggc tcactgcaac 180
ctccacctcc tggttcaagc gatctcaggc ctcagcttcc caagtagttg ggattacagg 240
cgcctgccac cacacctggc taattttgta tttttagtan anatggggtt ctccatgttg 300
gtcangctgg tctcaaactc ccgaactcaa gtgatctgcc cgccttgggc tcccaaaatn 360

<210> 250
<211> 464
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (397)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (436)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (446)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (459)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (460)
<223> n equals a,t,g, or c

<400> 250
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cgccattgca ctccagcctg ggcaacaaga gcgaaaccct gtctcaaaaa aaaaacaaaa 120
aaccccacaa aaactaggag cctggaaggc cggactgggt ctccgtggga ggggcctggg 180
tctggagagc agggcagggt ctcctgggcc taggggatgg ggatggggct gggtctcaga 240
ggaggcaggg tttacgtgca gaagagcgga cttggtctcc ggggtcccga gtgggtgacg 300
cggcccgcca caggtgcttc ctgaaggtga gccggctgga ggcacaactg ctcctggagc 360
gctaccccga gtgcgggaac ctgctgctgc ggcccancgg ggacggcgcc gacggcgtgt 420
cggtcaccac tcggcngatg ccaacnggaa cgcacgtgnn ccgg 464

<210> 251
<211> 315
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (37)
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<222> (305)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (311)
<223> n equals a,t,g, or c

<400> 251
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gtcgacccac gcgtttngct ccttgttcag gctggtctgg aactggcgac ttngggtgat 120
ccgcccgcct cggcctccca aagtggtggg attacaggtg tgagccaccg tgcccagccc 180
tgaaatagtc ttaattgctt gnttttcttn tttgtctgan gtgtgctttt taaaatctct 240
atggagatgg agaagactga cattntctgg cctgatgtga aaaacctctc attaaaaacc 300
gngtntgtag ntttg 315

<210> 252
<211> 333
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
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<222> (79)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

<220>
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<222> (233)
<223> n equals a,t,g, or c

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<222> (253)
<223> n equals a,t,g, or c

<220>
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<222> (254)
<223> n equals a,t,g, or c

<220>
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<222> (302)
<223> n equals a,t,g, or c

<220>
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<222> (303)
<223> n equals a,t,g, or c

<220>
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<222> (325)
<223> n equals a,t,g, or c

<400> 252
gggctaattt gtgtattttt agtggaaacg gggttttgcc acgttggcca ngctggtctc 60
gaactcctga cctcaggtna tccacccacc ccagcctccc aaagtgctgg gattacaggc 120
gtgagccact gagcccagcc nacttttcag tttttaacat aatttttgtt ttatccacaa 180
cttttcaagt attganagtn caataaaaaa catgggttct tagtctgtaa ctntctgtta 240
aagcctatga atnncttctg aaaatcatgt ttttaaatgc ataaaatata tacgattacg 300
anngaatctt attattgtcg aaatncagtt att 333

<210> 253
<211> 307
<212> DNA
<213> Homo sapiens

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<220>
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<222> (42)
<223> n equals a,t,g, or c

<220>
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<222> (48)
<223> n equals a,t,g, or c

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<222> (250)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (281)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (299)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (302)
<223> n equals a,t,g, or c

<400> 253
gaaaaanttt taaaggaaga agggaaggca ggctggggag gntggggnaa ggaagcaggg 60
agtgcagatc actccccttc catgagttgt tttcttaaga tgctagaact tggccaggca 120
tggtggctca cccctgtaat cccagcactt tgggaggctg aggctggcag atcacttgag 180
gtcaggagtt ccagaccagc ctggccaaca tggtgaaacc ccatctctac taataataca 240
aaatttagcn gggtgtgggn ggtgtgcacc tgtggcccta nctacttggg aaggctgana 300
cnaggag 307

<210> 254
<211> 401
<212> DNA
<213> Homo sapiens

<220>
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<222> (256)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (340)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (350)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (359)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (378)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (379)
<223> n equals a,t,g, or c

<400> 254

gtataaatgt tacttaaaaa aaatatattt ggccgagcac agtggctcac gcctgtaatc 60
cccacacttt gggaggccga ggcgggcaga ttgcctgagg tcaggaattt gagatcagcc 120
tggccaacat gatgaaaccc cgtctctact aaaaatacaa aaattagccg ggcatggtgg 180
caggcacctg taatcccggc tactcgggag gctgaggcag gaaaatcgct tgaacccggg 240
agtcggaagt tgcagngagc caaggtcatg tcatcattgc actccagctt gggcaacaag 300
agtgaagact tcgtctcaaa aaaaaaactt acagactttn ttttcctttn gtaaattgnt 360
agtttaactt tgaattcnng atgaaggatt tattcttatc t 401

<210> 255
<211> 406
<212> DNA
<213> Homo sapiens

<220>
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<222> (149)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (243)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (369)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (370)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (376)
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<220>
<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (392)
<223> n equals a,t,g, or c

<400> 255
gcttatcatt tgtattaaaa tatggtttaa tgtaaagagt tgcctttctc cattcccccc 60
tcccctcccc tcccctcctc tcccctcctc tcttaccccc aattaaaaaa tagcacatcc 120

ctaatgtggg aaacagtaag aaagcatana ttacatttta ggcagggcac agtggctcac 180
gcctgtaatc ccagcacttt cggaggctga ggtgggtgga tcacttgagg tcaggagttt 240
ganaccagcc tggccaacat ggtgaaaccc tgtctctact aaaagtacaa aaattagcca 300
ggcatggagg cgggtgcctg taatcccagc tacttgggag gctgaggcag gagaattgct 360
tgagcccann aggcanaggt tgcagtgagn anagatcggg ccattg 406

<210> 256
<211> 415
<212> DNA
<213> Homo sapiens

<220>
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<222> (27)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (324)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (378)
<223> n equals a,t,g, or c

<220>
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<222> (379)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (411)
<223> n equals a,t,g, or c

<220>
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<222> (412)
<223> n equals a,t,g, or c

<400> 256
gacatgaatt ccttaatgat gggagangat aaaatcaagt tcaaacacat caccccccctg 60
caggagcaga gcaaagaggt ggccatccgc atctttcagg gctgccagtt tcgctccgtg 120
gaggctgtgc aggagatcac agagtatgcc aaaagcattc ctggttttgt aaatcttgac 180
ttgaacgacc aagtaactct cctcaaatat ggagtccacg agatcattta cacaatgctg 240
gcctccttga tgaataaaga tggggttctc atatccgagg ggccaagctt catgacaagg 300
gagtttctaa agagcctgcg aaanctttg gtgactttat gggagcccag tttgagtttg 360
ccgtgaaatt ccatggcnng ggattatatg gacagcggct tgggcaaatt nnagc 415

<210> 257

<211> 414
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (297)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (375)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (380)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (397)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (411)
<223> n equals a,t,g, or c

<400> 257
cgcagaggaa accccgcacc cctggcagaa gttccggacc aagccccagg gggaccagga 60
caccggcaag gaggctgatg acggatgtgc ccttgggggc angtgatggg agcacagctg 120
gaacaatgtg ctcggccccc agtgctctgt gggagcccca ggacaagtga gctggtgtca 180
cctcctgcct gggggaagag ccaggccctg aagaacagcc gcagcgtgtc acaggtgttg 240
gtgaggacac acactaggcc caaggtgcct gtgctcccag caggttccaa gtgcaanttc 300
aagccaactt tgcgtgttaa cttcaacggg gacttccaag cttccaagct aacttttgtg 360
gtgttaacct tcaanaaaan caanaaaggg gggcttnggg gcattttggt ncct 414

<210> 258
<211> 373
<212> DNA

<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (324)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (328)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (351)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (361)
<223> n equals a,t,g, or c

<400> 258
ctccgagtca gggcccaggt gcagctctcc ggtggacaca gaatgcagcc atgctgaggg 60
cagccggagc caaggccctg agaaagcctt cagcccggct tctccatgtg cctggaacgt 120
gtgtgtcacc aggaaggccc ccctgctggc ctctgacagt agctcctctg ggggctccca 180
cagcgaggat ggcgaccaga aggcagcgag tgccatggat gcggtgagca ggggtcccgg 240
ccgggaggcc ccccgctgcc cacagtggcc aagacagaag aagcttttgg caaggttcgg 300
ttttctgaca accggctttt naancctncc ttgccccccgc gccaaaagga nttaatttct 360
ngcccaagcg ttg 373

<210> 259
<211> 529
<212> DNA
<213> Homo sapiens

<220>
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<220>
<221> misc feature
<222> (377)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (438)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (443)
<223> n equals a,t,g, or c

<220>
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<222> (444)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (495)
<223> n equals a,t,g, or c

<400> 259
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caagtcaact atgaagaatt cgtacagaat gatgactgca aaatgaagac ctactttcaa 120
ctcctttttc ccccctctta gaaagaatca aatttgaatc ttttacttac ctccttgcaa 180
aaaaaagaaa aaagaaaaaa ttccatttat tcatccttgt ttcctatata gccaaactga 240
atgttcaaaa gtaccttcct tgtcccacac acacaaatct gcatgtntgg ttgggggggt 300
ccctgtcccc ctaaagatca agctacactt cccattttta caatataata cttgttctac 360
cttatgatag atccctnaaa agtttcccct ttgctaatga ttatacctgt ttgggtggcc 420
agttttccct gcttgcantt gannaatgac ccagccggcc tttgttttaa attgaaatga 480
aaacaattcc aaccntccat ggttcccgtc cattgttaat taatggcca 529

<210> 260
<211> 566
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (361)
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<220>
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<222> (413)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (437)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (460)
<223> n equals a,t,g, or c

<220>
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<222> (473)
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<222> (509)
<223> n equals a,t,g, or c

<220>
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<222> (562)
<223> n equals a,t,g, or c

<400> 260
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gtttactttg gaaagaacca aagtttgcag aagatacaga aaactcctct ctttgtggcg 120
gcgatctgtg ctcattggtt tcagtatcct tttgacccat cctttgatga tgtggctgtt 180
ttcaagtcct atatggaacg cctttcctta aggaacaaag cgacactgaa aattctcaaa 240
gcaactgtgt cctcctgtgg tgagctggcc ttgaaagggt ttttttcatg ttgctttgag 300
tttaatggat ggatggatct cgcagaagca gggggtggat ggaagatgaa gatctaacca 360
ngtgcttgga tgagcaaatt ttacagccca gagactaaga ccattctacc ggntttttaa 420
gttccggcct tccaagnaat tcttggcggg ggatgaggcn ggattgaact ccngggatcc 480
agataggcag gaacatcaag attggggang gtaaccattg gaacaaacca ctcacccagg 540
tgacggtaag cgcctacaac antttt 566

<210> 261
<211> 502
<212> DNA
<213> Homo sapiens

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<222> (246)
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<220>
<221> misc feature
<222> (247)
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<220>
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<222> (262)
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<220>
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<222> (334)
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<220>
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<220>
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<222> (376)
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<220>
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<222> (477)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (484)
<223> n equals a,t,g, or c

<220>
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<222> (497)
<223> n equals a,t,g, or c

<400> 261
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nataacctgt cnaanttatc tgatgacana ttaccaangt gctccccccat ccccacagta 120
tagaangatt atttgcatgg gtgcanaana naatggnttg ccgctggant atcaanagan 180
gttaanagcn ttanaaccaa atgactatac ntgaaaggtc tcanaagaaa ntgangacat 240
catcannaag ggggaaacac anactcttta gancataaca gaatatatct aagggtattc 300
tatgtgctaa tatanaatat tattaacact tganaacang gatctggggg atctccacgt 360
tngatccatt ttcannagtg ctctgagagg agtatcttac ttggggtgac tccttgtttt 420
tagactatac tcagaaactg ggatanggag ttanaccatt taaaacgggt gtatganggc 480
ctgnaatatg tgacaantga at 502

<210> 262
<211> 489
<212> DNA
<213> Homo sapiens

<220>
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<222> (3)
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<221> misc feature
<222> (387)
<223> n equals a,t,g, or c

<220>
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<222> (440)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (464)
<223> n equals a,t,g, or c

<220>
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<222> (477)
<223> n equals a,t,g, or c

<220>
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<222> (483)
<223> n equals a,t,g, or c

<220>
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<222> (486)
<223> n equals a,t,g, or c

<400> 262
gnngacgcgt gggtccggga tgaggagtgg ggtggccact ccccccggag tcccagggga 60
tgggaccagg agcccgccag ggagcaggca ggcgggggct ggcgggccag gcggccccgg 120
gcccgctccg tggacgccct ggacgacctc accccgccga gcaccgccga gtcagggagc 180
aggtctccca cgagtaatgg tgggaggaga agccgggcct acatgccccc gcggagccgc 240
agccgggacg acctctatga ccaagacgac tcgagggact tcccacgctc ccgggacccc 300
cactacgacg acttcaggtc tcgggagcgc cctcctgccg accccaggtc ccaccaccac 360
cgtacccggg accctcggga caacggntcc aggtccgggg acctccccta tgatgggcgg 420
ctactggagg aggctgtgan gaagaagggg tcggacgaga ggangagacc ccacaangag 480
gangangaa 489

<210> 263
<211> 93
<212> DNA
<213> Homo sapiens

<220>
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<222> (22)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (51)
<223> n equals a,t,g, or c

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<222> (75)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (76)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (93)
<223> n equals a,t,g, or c

<400> 263
gcggctgccc gcctcgcgcg tnttccctgc ccgggtctcc tcgctgtcgc ngccgatgcc 60
acaccatggc cttcnncacc aggcagttca tgn 93

<210> 264
<211> 389
<212> DNA
<213> Homo sapiens

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<222> (45)
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<220>
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<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (358)
<223> n equals a,t,g, or c

<400> 264
ggcagagtnt gctcttggga agtncaggct cggttgtctt ttggnagcca tggagagtga 60
ctttaatctg cnttactacg tggggcacaa gggcaagtcc ggccangagt tcctggagtt 120
tgaagtttcg accggacgga gcttgaaatc gtcattggag atgaacacat ttcttttnac 180
aacatcaaaa attggttccc ttattgatgt caatcatgcc aaggatccag aaggcttacg 240

nagtatttna ttatcttgtc caggacctga agtgtttggt cttcagtctt attgggttac 300
acttcaagnt taaaccatct agactgnata ttngtgtggg acangggggt gggtgggngt 360
aggaaatttt gtgtattttc aggggcatt 389

<210> 265
<211> 400
<212> DNA
<213> Homo sapiens

<220>
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<222> (296)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (308)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (342)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (343)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (389)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<400> 265
tttgcccacg cgtccgccca cgcgtccgcc cacgcgtccg cccacgcgtc cgcaccccca 60
tcccagtccc agcctacttc cgccacgcag aacctggatt ctccctcaag aggcccaggg 120
ggctcagccg gagcctccca cctccgcccc ctgccaaggg cagcattccc atcagccgcc 180
tcttccctcc tcggacccca ggctggcacc agctgcagcc ccgcgggtgt cattccgggc 240
gaaggcctag agactctgca gagccctggg tatgacccaa gccgcaaaag tctttnttca 300
agcaaagntt caaaaggtta agccgcttgg gcaatggttt annggaaagg ttttaagggg 360
gcctccaagg gaggacggcc ggttttttnn ggaaaagggt 400

<210> 266
<211> 382
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (42)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (44)
<223> n equals a,t,g, or c

<220>
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<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (88)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (103)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (109)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (162)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (166)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (185)
<223> n equals a,t,g, or c

<220>
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<222> (186)
<223> n equals a,t,g, or c

<220>
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<222> (220)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (248)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (278)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (301)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (326)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (341)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (350)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (362)
<223> n equals a,t,g, or c

<400> 266
ggacctggan cggaggcggg aagaaagtca tacccagatc cnanatccnc acgcagaatg 60
cacaggtgag ctgccgctgg gcccgganca tgctgggcgt tcncacctng cagactgcac 120
gctccaaccg cccgctccac ctactctttc caggcccggc ancttntgga gaaggaattc 180
agcannctta tctccttagg cacagacagg ctgctggacn aggacatgcg ccaagtcttt 240

cagttcgntc cccatcctgg cggaagatgt tccggganga aggacctccg aggcgtaact 300
ngccgactca ctgagatgtt gccccncaac tttcgttcgg ntgcagcggn attcctgggc 360
tnttccgggg ctcccttttc cc 382

<210> 267
<211> 449
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (374)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (433)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (446)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (447)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (448)
<223> n equals a,t,g, or c

<400> 267
gggcgatggc tgaaggacca ggagctgagc cctcgggagc cggtgctgcc cccacagaag 60
atggggccta tggagaaatt ctggaataaa tttttggaga ataaatcccc ttggaggaaa 120
atggtccatg ggtatacaa aaagagtatc tttgttttca ctcatgtact tgtacctgtc 180
tggattattc attattacat gaagtatcat gtttctgaaa aaccatatgg catagttgaa 240
aagaagtcca gaatattccc tggtgataca attctggaga ctggagaagt aattccacca 300
atgaaagaat ttcctgatca acatcattaa agattatgta aaaaggtaaa aggcttatga 360
gcctaagttt ggtnctatat taccatattt actggaattt tcttggaaaa gtactttaat 420
aaagtttaat ctnagaaaaa aaaaannna 449

<210> 268
<211> 594
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<400> 268
ngcaagcnga caccaaccct cactaaaggg aacaaaagct ggagctccac cgcggtgcgg 60
ccgctctaga actagtggat cccccgggct gcaggaattc ggcacgaggt cagtgtcggg 120
cgcagacggc ggcagtgcgg cttgctcttg gaagttcagg ctcggttgtc ttttgggagc 180
catggagagt gacttttatc tgcgttacta cgtggggcac aagggcaagt tcggccacga 240
gttcctggag tttgagtttc gaccggacgg gaagttaaga tatgccaaca acagcaatta 300
caagaatgat gtcatgatca gaaaagaggc ttatgtacat aaaagcgtga tggaggaact 360
gaagagaata attgacgaca gtgaaattac caaagaggat gatgcattgt ggcctcctcc 420
tgaccgagtg ggccggcagg agcttgaaat cgtcattgga gatgaacaca tttcttttac 480
aacatcaaaa attggttccc ttattgatgt caatcaatcc aaggatccag aaggcttacg 540
agtattttat tatcttgtcc aggacctgaa gtgtttggtc ttcagtctta ttgg 594

<210> 269
<211> 332
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (240)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (275)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (296)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (321)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<400> 269
gcgggatttg ggtcgcagnt cttgtttgtg gattgctgtg atcgtcactt gacaatgcag 60
atcttcgtga agactctgac tggtaagacc atcaccctcg aggttgagcc cagtgacacc 120
atcgagaatg tcaaggcaaa gatccaagat aaggaaggca tccctcctga ccagcagagg 180
ctgatctttg ctggaaaaca gctggaagat gggcgcaccc tgtctgacta caacatccan 240
aaagagtcca ccctgcacct ggtgctccgt ctcanaggtg ggatgcaaat cttcgngaag 300
accctgactg gcaagaccat naccettgag gn 332

<210> 270
<211> 515
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<400> 270
gcnnganacn aaccctcact aaagggaaca aaagctggag ctccaccgcg gtgcggccgc 60
tctagaacta gtggatcccc cgggctgcag gaattcggca cgagggatgt tgatgtcctg 120
catctaacgc ggtgtaaccc ccgaagccga gcgagctccg gaggaatttc agtatctgct 180
acggtaactt catcagcccg ccaagatggc gatgcaagcg gccaagaggg cgaacattcg 240
acttccacct gaagtaaatc ggatattgta tataagaaat ttgccataca aaatcacagc 300
tgaagaaatg tatgatatat ttgggaaata tggacctatt cgtcaaatca gagtggggaa 360
cacacctgaa actagaggaa cagcttatgt ggtctatgag gacatctttg atgccaagaa 420
tgcatgtgat cacctatcgg gattcaatgt ttgtaacaga taccttgtgg ttttgtacta 480
taatgccaac agggcatttc agaagatgga cacaa 515

<210> 271
<211> 141
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (39)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (141)
<223> n equals a,t,g, or c

<400> 271
cactccatgg gnnnctctgt gtggnatttg gggcccctnc atacttcatt tattatatta 60
tcaaaactga gagggatagg aaagtaaaaa cttatccagg taggaaaatt ggatcgaaca 120
tttcacctct catattaagg n 141

<210> 272
<211> 433
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (52)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (94)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (139)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (166)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (187)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (198)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (244)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (248)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (259)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (274)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (276)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (288)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (355)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (396)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (402)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (427)
<223> n equals a,t,g, or c

<400> 272
gagcggcggc ggaccgcagc gaagtggcga gntagtggca aacgttgant tntgaagggg 60
ggcccaagat gaccggttct aacgaagttc aagntgaacc agccacccgg aggatagcat 120
ctcctccgta aagttcagnc ccaacacctc ccagttcctg cttgtntcct cctgggncac 180
gtccgtncga ctctacgnat gtgccggcca actccatgcg gctcaagtac cagcacaccg 240
gagncgtnct ggactgcgnc ttctacggtc caangnatgc ctggagtnga ggactagatc 300
atcagttgaa aatgcatgat ttgacactga tcaagaaaat ttcttggacc catgntgccc 360
tatnagatgt gttgaatact gtcagaagtg aattanaatg gnactggaag ttggggttag 420
ccagttnacc tgt 433

<210> 273

<211> 432
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (187)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (190)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (371)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (373)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (380)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (430)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (432)
<223> n equals a,t,g, or c

<400> 273
ggttcatctc cgtctcagaa aagagcaagg atcgcggcag caacacgatc ggcgcccgcc 60
tgaaccgagt agaagacaag gtgacgcagc tggaccagag gctggcactc atcaccgaca 120
tgcttcacca gctgctctcc ttgcacggtg gcagcacccc tgagcccact gtgcgtgggg 180
ctcccgnctn caacccctcg cccagtccca gcagccagcc aaacacacag aaggggactg 240
ccaccttccc ttgccagctg ctgagccgca gagaagtgac ggttcctaca caggacaggg 300
gttccttctg ggcattacat cgcatagaaa tnaataattt gtggtgattt ggatctgggt 360

tttaatgaat ntnacagtgn gactttgatt attaattgag caagcttttc ctaataaacg 420
tggagaattn cn 432

<210> 274
<211> 276
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (95)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (234)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (255)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (264)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (265)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (269)
<223> n equals a,t,g, or c

<400> 274
gatcgcttct ctgggtccaa gtctgccagc acggcctccc tgaccatctc tgggctccag 60
gctgaggacg aggctgatta ttactgcagc tcatntacaa gtagtatctc ttatgtcttc 120
ggaactggga ccaaggtcac cgtcctagtc cagcccaagg ccaaccccac tgttcactcc 180
tgtttccccc cctcctcctt aagaacttcc aagcccaaca aaggcaacta tgtnttttgg 240
aaccattact tctanccggg aaanntttna aaatgc 276

<210> 275
<211> 351
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (48)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (78)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (87)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (117)
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<222> (150)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (154)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (174)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (178)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (206)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (219)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (241)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (248)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (288)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (292)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (303)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (329)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (349)
<223> n equals a,t,g, or c

<400> 275
ccgcagacta gggcgcctcg ggccagggga acgcggaaga gccatggnca ccggctaacg 60
gggccgtgga aaacgggnac cggacangaa gccgccggcc ctgccgcgcc ccatccncaa 120
cctggaagtc gagttcacca agatatttan caanaatgga atgggacgaa tccnagantg 180
ggaaaaagtg tgctacatgt taccentcaa ctccgggane aaatatgtga agtggaagaa 240
ngagatangg ccgacgtggg acgaaggctg tggaagctgc acagggtngc tnccaaaaag 300
ggntccccca tgggcgcccg gtgggatgnc ctgaattcct tggccggtng c 351

<210> 276
<211> 463
<212> DNA
<213> Homo sapiens

<400> 276
gctgaattct ggctgaccag ggcagtcacc agagctccag acaatgtctg tctccttcct 60
catcttcctg cccgtgctgg gcctcccatg ggtgtcctg tcacaggtgc agctgcagca 120
gtcaggtcca ggactggtga agccctcgca gaccctctca ctcacctgtg ccatctccgg 180
ggacactgtc tctaggaaca gtgctggttg gaactggatc aggcagtccc catcgagagg 240

ccttgagtgg ctgggaagga catactacag gtccaaatgg tataatgatt atgccgtatc 300
tgtgaaaagt cgaataacca tcaacgcaga ttcaaccaag aatcagttct ctctgcagct 360
gaactctgtg actcccgagg acacggctct gtattactgt gcaagagatc ggggcagctg 420
gtccgatgaa gccgaggggc tcccgccgcg ttacttctac tac 463

<210> 277
<211> 463
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (392)
<223> n equals a,t,g, or c

<400> 277
ctgtcctcta gagaaaaccc tgtgagcaca gctcctcacc atggactgga cctggaggat 60
cctcttcttg gtggcagcag ctacaagtgc ccactcccag gtgcagctgg tgcagtctgg 120
tgctgaggtg aagaagcctg gggcctcagt gaaggtctcc tgcaaggctt ctggatacac 180
cttcaccagt tatgatatca actgggtgcg acaggccact ggacaggggc ttgagtgggt 240
gggatggatg aaccctaaca gtgctaacac aggctatgca cagaagttcc agggcagagt 300
caccatgacc aggaacacct ccataagcac agcctacatg gagctgagca gcctgagatc 360
tgaggacacg gccgtctatt actgtgcgag anggaggcgg tgggagctgc tcgggatgat 420
gtgggacttt gactactggg gccagggaac cctggtcacc gtc 463

<210> 278
<211> 343
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (172)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (271)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (284)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (293)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (294)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (315)
<223> n equals a,t,g, or c

<400> 278
ggcagaggga tctcagggct tctttttctg tcctccacca tcatggggtc aaccgccatc 60
ctcgccctcc tcctggctgt tctccaagga gtctgtggcg aggtgcagct ggtacatgct 120
ggaggagaga tgaggaaagc ccggggagtc tctgaagatc tcctgtgaag gntgttggga 180
tacacctttg aacatctact gggatcggct gggtgcgcca gatgcccggg gaaggcctgg 240
gagtgggtgg ggcatcatat gtcctggtga ntctgatggc cagngatagc cannctttc 300
gagggccaga tgcancatgt gcagtcgaca agtgccacca aca 343

<210> 279
<211> 436
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (121)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (151)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (211)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (326)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (362)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (373)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (392)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (403)
<223> n equals a,t,g, or c

<400> 279
gcaccatggc ttggacccca ctcctcttcc tcaccctcct cctccactgc acagggtctc 60
tctcccagct tgtgctgact caatcgccct ctgcctctgc ctccctggga gcctcggtca 120
ngctcacctg cactctgagc agtgggcaca ncgactacgc catcgcatgg catcagcagc 180
agccagagaa gggccctcgg tacttgctga ngcttaacac tgatggcagc cacaggaagg 240
gggacgggat ccctgatcgc ttctcaggct ccagctctgg ggctgagcgc tacctcacca 300
tctccagcct ccagtctgag gatgangctg actattactg tcagaactgg ggctttggga 360
tngtattcgg cgnaagggac caanctgaac gncctaagtc agnccaaggc tgccccctcg 420
gtcaatctgt tcccgg 436

<210> 280
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<212> DNA
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<220>
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agctgtgaga tcactggnct ttggaaaaag gaattctagt gaagtgaaca attgcgaact 180
gaacttagga aggtcctgga ggagtgtttt gacctggaaa atgnagccca gtgtggttca 240
agggtnagac tgcagagttt agaggtgggg agcactgagn cggtggcaga ttgggtccca 300
gggttggntt gaagn 315

<210> 281
<211> 411
<212> DNA
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<220>
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<223> n equals a,t,g, or c

<220>
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<222> (411)
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agaagaatat gaaaaagcag agcgactcgg ttaagggaaa gcgccgagat gacgggcttt 120
ctgctgccgc ccgcaagcag agggactcgg agatcatgca gcagaagcag aaaaaggcaa 180
acgagaagaa ggaggaaccc aagtagcttt gtggcttcgt gtccaaccct cttgcccttc 240
gcctgtgtgc ctggagccag tcccaccacg ctcgcgtttc ctcctgtagt gctcacaggt 300
cccancaccg atggcattcc ctttgccctg agtctgcanc gggtcccttt tgtgcttnct 360
tcccctcaag tacctntttc cccctgggcc acttccgggg gtnagggggg n 411

<210> 282
<211> 570
<212> DNA
<213> Homo sapiens

<220>
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<222> (6)
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<220>
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<223> n equals a,t,g, or c

<220>
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<222> (12)
<223> n equals a,t,g, or c

<220>
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<222> (217)
<223> n equals a,t,g, or c

<400> 282
gcaagnngaa antaaccctc actaaaggga acaaaagctg gagctccacc gcggtgcggc 60
cgctctagaa ctagtggatc ccccgggctg caggaattcg gcacgagtag agacagcgcc 120
ggggcaagtg agagccggac gggcactggg cgactctgtg cctcgctgag gaaaaataac 180
taaacatggg caaaggagat cctaagaagc cgagagnaaa atgtcatcat atgcattttt 240
tgtgcaaact tgtcgggagg agcataagaa gaagcaccca gatgcttcag tcaacttctc 300
agagttttct aagaagtgct cagagaggtg gaagaccatg tctgctaaag agaaaggaaa 360
atttgaagat atggcaaaag cggacaaggc ccgttatgaa agagaaatga aaacctatat 420
ccctcccaaa ggggagacaa aaaagaagtt caaggatccc aatgcaccca agaggcctcc 480
ttcggccttc ttcctcttct gctctgagta tcgcccaaaa atcaaaggag aacatcctgg 540

gctgtccatt ggtgatgttg cgaagaaact 570

<210> 283
<211> 366
<212> DNA
<213> Homo sapiens

<220>
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<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
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<222> (10)
<223> n equals a,t,g, or c

<220>
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<222> (32)
<223> n equals a,t,g, or c

<220>
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<222> (39)
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<220>
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<222> (327)
<223> n equals a,t,g, or c

<220>
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<222> (333)
<223> n equals a,t,g, or c

<220>
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<222> (337)
<223> n equals a,t,g, or c

<220>
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<222> (348)
<223> n equals a,t,g, or c

<220>
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<222> (357)
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agcggatttc acacatgcct agcagaccag aactctcggc agttgctaca agggaagaaa 120
ggactatgtg gatcccttgt ggctatgcag atacctacct cacagagttg ttgtagaaga 180
ctggtggttt ggttcaaacc ttgtgattaa agagtttgtc aagcatttta ttcttttgaa 240
taaaagcaac atatctaaaa catttaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 300
aaaaaaaaaa aaaaaaaaaa aaagggnggc cgntttnaag gatccaanct tacgaancgt 360
gcatgc 366

<210> 284
<211> 414
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (394)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (395)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (398)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (407)
<223> n equals a,t,g, or c

<400> 284
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gggtgggccc cgatggtcac acctgctcac tcttcccaga ccacccccctc ctacaggagc 120
gggagaagat tgtggctccc atcagtgact ccccgaagcc accgccacag cgtgtgaccc 180
tcacgctacc tgtcctgaat gcagcacgaa ctgtcatctt tgtggcaact ggagaaggca 240
aggcagctgt tctgaagcgc attttggagg accaggagga aaacccgctg cccgccgcct 300

ggtccagccc cacaccggga aactgtgctg gtcttggacg aggcggccgc cgcttctgac 360
cgtgcccttc gagaaacatt ccactttgna actnngcnca aaggacnccc aaat 414

<210> 285
<211> 551
<212> DNA
<213> Homo sapiens

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<222> (8)
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<220>
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<222> (22)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (271)
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<220>
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<222> (324)
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<220>
<221> misc feature
<222> (325)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (365)
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<220>
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<222> (368)
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<220>
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<222> (482)
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<220>
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<222> (526)
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<220>
<221> misc feature
<222> (528)
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<220>
<221> misc feature
<222> (536)
<223> n equals a,t,g, or c

<220>
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<222> (545)
<223> n equals a,t,g, or c

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gganacggtg acggtgctgc gcaagaaggg ccctacggac gcccagcaac atccaagcag 120
gctatcttag cggcacaaag actaggagaa gatgtggaga cttccaataa atgggctgcn 180
ggccanaaca aacaacattc tattaccaag aacacggcca agctngaccg gganacagag 240
tgctgcacca tgacaggtga ccctgaagtg ngtcaagtga tccagcaagt cggcananca 300
agggcttaca cataacganc tngnnacgaa aatcatgata agccacagtg atcgcagact 360
atganagngg tacggccata cccaataacc agtgcttggc aaaatcgacn ggaccattgg 420
ctccaagctc cgggaaagac attggaaaac ccatcgagaa gggcctaggc gaaatgaaca 480
cnaagcctcg aaatcatgag ctccagctga tctcttccgc cgttcncntg gccgcnattc 540
cgttntcctc a 551

<210> 286
<211> 615
<212> DNA
<213> Homo sapiens

<220>
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<222> (3)
<223> n equals a,t,g, or c

<400> 286
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ctagaactag tggatccccc gggctgcagg aattcggcac gagtattgcc tctgagggag 120

tccaactgta tacctgcatc agtgtcattc ctttgtgtga tttcttaatg ctgtatttgt 180
tcatctcaaa cctagatgta tacagctctg agttataaat ggttataaag ctcctgttac 240
tcatattagt tatttacatc aaaaagcttt tagaaaatgg tacgaggtaa ccaattcttg 300
tcatggtgaa atctgattga gtaaccaagc agttttacta ttctggtgct gcttcataac 360
aaaaatgaaa agctgcatgc atctacagca ggcatggatt gtttatgtcg tatgatatcc 420
tttattaagt aagttcactt atagtatttc tataatttga ttcattgccg taatagagcc 480
atgtaggaaa tgcactgatt gcatgttatt gtggcaagaa tatcctaaat gtcattaaaa 540
tcctccaaca tgatggatct acttatggtc ttgtttgttg acatgacaaa ttaacattct 600
tatagttaca tctgg 615

<210> 287
<211> 302
<212> DNA
<213> Homo sapiens

<220>
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<222> (221)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (226)
<223> n equals a,t,g, or c

<220>
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<222> (237)
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<222> (286)
<223> n equals a,t,g, or c

<220>
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<222> (296)
<223> n equals a,t,g, or c

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gcggaatgtc acacacattg atcaggcact ccaggaagct catcgggtgc tgaaaccagg 60
aggacggttt ctctgtctgg aatttagcca agtgaacaat cccctcatat ccaggcttta 120
tgatctatat agcttccagg tcatccctgt cctgggagag gtcatcgctg gagactggaa 180
gtcctatcag taccttgtag agagtatccg aaggtttccg nctcangaag agttcangga 240
catgatagaa gatgcaggct ttcacaaggt gacttacgaa agtctnacat caggcnttgt 300
gg 302

<210> 288
<211> 414
<212> DNA

<213> Homo sapiens

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<220>
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<222> (57)
<223> n equals a,t,g, or c

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<222> (63)
<223> n equals a,t,g, or c

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<222> (91)
<223> n equals a,t,g, or c

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<222> (95)
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<222> (168)
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<220>
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<220>
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<220>
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<220>
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<222> (379)
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<220>
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<222> (385)
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<220>
<221> misc feature
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<223> n equals a,t,g, or c

<220>
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<222> (402)
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tgtcgagtgg cgcccatggc gaagagntct canctcnnat gtggaagnct ctcaccttct 180
tcgtcgcgct ccccggggtg ncagncanca tnctgnatgt ntacctnaag tcncaccacg 240
gagagcacga ganacccgag ttcatcgtct acccntatct ncgtatcagg ancaagcnnt 300
ttccctgggg agatngtnac catacttttt tncataaccc ntatgtgnat ccanttccnc 360
ttnntacgga gntgtatana gagantttgn ccattaccgg gncaacaggg ccca 414

<210> 289
<211> 184
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (142)
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<220>
<221> misc feature
<222> (159)
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<220>
<221> misc feature
<222> (175)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (176)
<223> n equals a,t,g, or c

<400> 289
ggacttnant tctntggaat gcatngaatg gcagngacgc attggccctg cccttggcct 60
gcattgatga cgagatggac tgtgagcctc agggccccgc ncctggccca gctctccgat 120
gtggccatgc acagcctggg tntggctttc atctatganc agactgacga catcnnggat 180
gttc 184

<210> 290
<211> 207
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

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<220>
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<222> (133)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (149)
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<220>
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<222> (160)
<223> n equals a,t,g, or c

<220>
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<222> (176)
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<220>
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<222> (200)
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<400> 290
ggacgtacng tcctnctagt ngaggaatat gtcgagtttc tctanggctg ccccagcaat 60
ggnccacttt tgctaaaata tggtatatct tagatgggaa aatgcancca cctggcaaac 120
ttgctgctat ggnatctata agacttcang gattacatan acctgcgtac catgcnctga 180
ctgactgtgg ggatcatgtn tgttata 207

<210> 291
<211> 492
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (33)
<223> n equals a,t,g, or c

<220>
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<222> (437)
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<220>
<221> misc feature
<222> (448)
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<222> (472)
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<221> misc feature
<222> (474)
<223> n equals a,t,g, or c

<220>
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<222> (477)
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<400> 291
gaagagacat tgaacctgga gaagaaattt ctngttatta tggagatggg ttctttggag 60
aaaataatga gttctgcgag tgttacactt gcgaaagacg gggcactggt gcttttaaat 120
ccagagtggg actgcctgcg cctgctcctg ttatcaatag caaatatgga ctcagagaaa 180
cagataaacg tttaaatagg cttaaaaagt taggtgacag cagcaaaaat tcagacagtc 240
aatctgtcag ctctaacact gatgcagata ccactcagga aaaaaacaat gcaacttcta 300
accgaaaatc ttcagttggc gtaaaaaaga atagcaagag cagaacgtta acgaggcaat 360
ctatgtcaag aattccagct tcttccaact ctacctcatc taagcttaac tcatataaat 420
aattccaggg taccaanaga aactgaanaa agtctgcaaa gcctttactt tnanagntaa 480
acattgagaa at 492

<210> 292
<211> 237
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (226)
<223> n equals a,t,g, or c

<400> 292
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tactnatgga cacattcanc tgtaaactcc ttccctgggg ggtcaaggtn naccatcatc 120
cancctggnt gcttcaagac agagtcagtg aagaaacgtg ggttcantgg gaaaagcgcc 180
aacaanttgc tnctggccca accttgtctn aagagcttct gcaggnctta cgggaaa 237

<210> 293
<211> 630
<212> DNA
<213> Homo sapiens

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<222> (580)
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<222> (588)
<223> n equals a,t,g, or c

<220>
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<222> (594)
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<220>
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<222> (608)
<223> n equals a,t,g, or c

<220>
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<222> (609)
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<400> 293
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tctttcaaaa cctcaatcgt cgacagcatg agcatgccat ccacatgatg gacattgcaa 120
tcattgccac agacctcgcc ctgtatttca agaagaggac gatgttccaa aagatcgtgg 180
atcagtctaa gacatatgag agttaacagg agtggacaca gtacatgatg ctggagcaga 240
cacggaagga aatcgttatg gccatgatga tgaccgcctg tgatctctca gccatcacca 300
aaccctggga ggtgcagagc caggtagctc tgctggtggc tgctgaattc tgggaacaag 360
gtgacctgga gcgcacggtg ctgcaacaga atcccattcc catgatggac agaaacaaag 420
cagatgaact ccctaagctt caagtcggct tcattgactt tgtttgcacc ttcgtctaca 480
aggaattctc ccgtttccac gaggagatca ccccaatgtt ggacgggatc accaacaatc 540
gcaaggagtg gaaggccgct tgctgatgaa tacgatgccn agatgaangt gcangaagag 600
aagaaacnna aaccagcaag tcggccaagt 630

<210> 294
<211> 346
<212> DNA
<213> Homo sapiens

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<400> 294
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ggggtaaatc ctggttaccc canaactata ccctggttga tatgaagatt gantttggtg 120
ttgatataac caccaaagaa atggttcttg ctgatgattc ctggagactg gccattacga 180
gtattgaagc caacagtaaa gacannnagt cttactgggn gctcaaagaa gtaactcctg 240
aagggctcna aatggtaaag aaaagctttg aggccgggca cggtgactca tgcctgtaat 300
cccagcactt tgggaggcca aggcaggcag atcacccaag gtcagg 346

<210> 295
<211> 531
<212> DNA
<213> Homo sapiens

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tcctcgtgcc accctccaaa ccagaatgcg gcatcgaggg agagaccata attgggaaca 120
acatccagct gacctgccaa tcaaaggagg gctcaccaac ccctccagta cagctggaaa 180
gaagttacaa catcctgaat caagancanc ccctggcccc acccacctca ggttcaacct 240
gttctccctt aaaaaatatc tcccacagaa cacatcnggt ttatantctt gttcctccca 300
gcaataagaa nggaaaccnn tttctgcaac ttcacggtgg ccttncaaat ctncccccca 360
taaantttgg cccntttttt tgnctccccg gggggggtttt ttttttcacc cccccttatcc 420
ntngngncan cnccttangg ngcngccncc caggggaaag annnaacccc naaaaaaagg 480
gaaaaccggg caccnggacc ctttgaanac cccacactnt aaaatttcca a 531

<210> 296
<211> 572
<212> DNA

<213> Homo sapiens

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<220>
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<222> (451)
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<220>
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<222> (570)
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caggcagctt cagcgcactg agctgatgga ccactcgagg accaccctcc agcgggagat 120
ccatgcagcc aagtcactgg ccatgattgt ggggattttt gccctgtgct ggttacctgt 180

gcatgctgtt aactgtgtca ctcttttcca gccagctcag ggtaaaaata agcccaagtg 240
ggcaatgaat atggccattc ttctgtcaca tgccaattca gttgtcaatc ccattgtcta 300
tgcttaccgg aaccgagact tccgctacac ttttcacaaa attatctcca ggtatcttct 360
ctgccaagca gatgtcaaga gtgggaatgg tcaggctggg gtacagcctg ctctcggtgt 420
gggcctatga tctangctct cgcctnttca ngagaagatc aaatncacaa gaaacaaaga 480
ggacacggnt ggttttattg ngaaagatag ctacacctta caaggaaatg gactggctnt 540
tttgancact tcctggaact accacgtatn ta 572

<210> 297
<211> 334
<212> DNA
<213> Homo sapiens

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<222> (74)
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<220>
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<222> (293)
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<222> (315)
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<222> (316)
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<222> (317)
<223> n equals a,t,g, or c

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gcaacanccg cttnacctac agcntcactn tcgatggctg cacgantnac accggagncc 120
tggggcaaga nagtgaattg aattacaaaa ccaccaagac ctcccgnttg cccatnnatc 180
gatgtggccc ccttggaacg ttggtgcccc aaaccaggna attcggnttc gaacgttggg 240
ccctgtttgg tttcctgtaa aantcccttc cattcccaac ctgggttccc tnnccaaccc 300
aaccaaattt ttccnnncna acccgggaaa cagg 334

<210> 298
<211> 293
<212> DNA
<213> Homo sapiens

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gctgtctatg aaagcgcaga ggccccgggc cactatcccg cagaggacag cacctacgat 120
gagtacgaga acgatctggg gatcacagcc gtcgccctgt acgantacca ggctgcgggc 180
gatgatgaga tctcatttna ccctgatgac atcatcacca acatcgagat gattgangac 240
ggctggtggc gcggggtgtg caagggccgc ttcagggagc tcgcattctc ttg 293

<210> 299
<211> 418
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<220>
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<220>
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<222> (408)
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ccccaccgac nttggntnag gataactcca ggtacacaca cttcctgacc cagnactatg 120
atgccaaacc acagggccgg gatgacagat actntgaaag catcatgngg agacggggcc 180
tgacctgacc ctgcaaagac atcaacacat ttnttcatgg naacaagcgc agattcaagg 240
ncatctgtga aaacaaggan tggaaaccnt tacagggnaa cctnaggttt angnaagttt 300
tttttttcca ggnaaccatt tggaaagttn aatngggggt ttcccnnggg tntnnaanga 360
ctttcccggg gcnaaangng ggnttaaaaa annttttttt tttttttnga aaaaggtt 418

<210> 300
<211> 346
<212> DNA
<213> Homo sapiens

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<220>
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<222> (107)
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<220>
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<222> (277)
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<220>
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<222> (296)
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<220>
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<220>
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cctcttccct gccaaggttg tctctcgcct ggtgaantgg gtgacanttg cccatgagga 120
ttacatggag ctgcacttca ccaaagacat tgtggatgcg ggactggctg gggacaccaa 180
tctctactac atggcgctca tcgaaagggg cacagccaaa ctgcaggccg ctgtggtgtt 240
gaaccctggc tactcctcca tcccacctgt tttccanctc tgtttgaact ggaaanggga 300
gaaaaccaac agcaacnatn acaacattcn gggccatgga gggcga 346

<210> 301
<211> 213
<212> DNA
<213> Homo sapiens

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<222> (46)
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<220>
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<222> (119)
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<220>
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<222> (170)
<223> n equals a,t,g, or c

<220>
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<222> (202)
<223> n equals a,t,g, or c

<400> 301
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aaaaanttgg tactaccagn tattggttcg tttacaatta ttgatggaaa tcaagtcanc 120
ggacaaaatn ctggaaacaa tttcttcctt caaaaaatct tatcngcaan aaccgactga 180
agctgccata gatttcctta cnagaattaa ata 213

<210> 302
<211> 440
<212> DNA
<213> Homo sapiens

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<220>
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<222> (324)
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<220>
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<222> (342)
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<220>
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<222> (382)
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<400> 302
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ttcaccatgg accgggaagt gcgcaaaatc aaacaaggcc tgggcttgaa atttgctgag 120
ntggtgtata ccggtttctg gcacagccct gagtgtgaat ttgtccgcca ctgcatcgcc 180
aagtcccagg agcgagtgga agggaaagtg caggtgtccg tcctcaaggg ccaggtgtac 240
atcctcggcc gggagtcccc actgtctctc tacaatgagg agctggtgag catggatgag 300
aacctcatgc acatcagcta cgangctgga atcctggaga ancccaagaa ccaagcgctc 360
cangtcttaa acgaagaccc angacccagc caaagcccca acaaccctga catctccgag 420
atcgagttca aaaaagggtc 440

<210> 303
<211> 495
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<400> 303
ctcataaggg accaaagctg gngctccacc gcggtggcgg ccgctctagc actagtggat 60
cccccgggct gcaggacgcc atgttggggt ttgtgggtcg ggtggccgct gctccggcct 120
ccgggggcctt gcggagactc accccttcag cgtcgctgcc cccagctcag ctcttactgc 180
gggccgtccg acggcggtcc atcctggtga gagcacagta aggactattg ctatggatgg 240
tacagaaggc ttggttagag gccagaaagt actggattct ggtgcaccaa tcaaaattcc 300
tgttggtcct gagactttgg gcagaatcat gaatgtcatt ggagaaccta ttgatgaaag 360
aggtcccatc aaaaccaaac aatttgctcc cattcatgct gaggctccag agttcatgga 420
aatgagtgtt gagcaggaaa tcttgtgact ggtatcaagg ttgtcgatct gctagcttcc 480

tatgccaagg gtggc 495

<210> 304
<211> 293
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (284)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (286)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (287)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (289)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (292)
<223> n equals a,t,g, or c

<400> 304
ggtcagggac aagatggtgc caccggtgca ggtctctccg ctcatcaaga ttacctaaaa 60
cctcgggcag aagaggagag gaggatagca gcagaagaga agaagaagca ggatgaactg 120
aaacggattg ccagagaatt ggcagaagat gacagcatat taaagtgagt gaccctgcga 180
cccactcttt ggaccagcag cggatgaata aagcttcctg tgttgtgtga aaaaaaaaaa 240
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaagggg cggncnntnt tna 293

<210> 305
<211> 261
<212> DNA
<213> Homo sapiens

<220>
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<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (36)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (181)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (190)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (205)
<223> n equals a,t,g, or c

<400> 305
ccggaatcgg ccctgtngcc cccgcccgca ctccanagcc ggctgagaac ggcagcggcg 60
agggctccac gtgcagcgtc tctccgggca ccttcgggtc caggactaca actcccggca 120
gggtgcgcaa aacgaccgcc caaggcaacg gaggctcacg agaatcagca tgattcttca 180
naggctcttn aggttctcct ctgtnattcg gtcagccgtc tcagtccatt tgcggaggaa 240
cattggtgtt acagcagttg g 261

<210> 306
<211> 502
<212> DNA
<213> Homo sapiens

<220>
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<222> (41)
<223> n equals a,t,g, or c

<220>
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<222> (147)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (165)
<223> n equals a,t,g, or c

<220>
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<222> (173)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (186)
<223> n equals a,t,g, or c

<220>
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<222> (213)
<223> n equals a,t,g, or c

<220>
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<222> (253)
<223> n equals a,t,g, or c

<220>
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<222> (260)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<222> (274)
<223> n equals a,t,g, or c

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<222> (293)
<223> n equals a,t,g, or c

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<222> (316)
<223> n equals a,t,g, or c

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<222> (324)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (346)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (423)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (436)
<223> n equals a,t,g, or c

<220>
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<222> (462)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (468)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (488)
<223> n equals a,t,g, or c

<400> 306
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caactaacct cctcggactc ctgcctcact catttacacc aaccacccaa ctatctataa 120
tcctagccat ggccatcccc ttatgancgg gcgcagtgat tatangcttt cgntctaaga 180
ttaaanatgc cctagcccac ttcttatcaa aangcacacc tacacccctt atccccatac 240
tagttattat ggnaaacatn atcctactcn ttcnaccaat agccctgggc gtnagcctaa 300
tcgcttacat tactgnaggg cacntactca tgcacctcat tggaancgtc ccctacaata 360
tcaatcatta aacttccctc tacacttatc tcttcacatt ctattctaac ttaatatcct 420
aanaaattcc ttttcncttt attccaagcc caactttttc cnactttntt cttaaacccc 480
ttactttncg aaaaaccttt tt 502

<210> 307
<211> 119
<212> DNA
<213> Homo sapiens

<220>
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<222> (14)
<223> n equals a,t,g, or c

<220>
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<222> (33)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (40)
<223> n equals a,t,g, or c

<220>
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<222> (67)
<223> n equals a,t,g, or c

<220>
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<222> (76)
<223> n equals a,t,g, or c

<220>
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<222> (113)
<223> n equals a,t,g, or c

<400> 307
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tgttgtnatc cctcanttgc ggagaatatt aaccatattg cagtggctca ccntaccag 119

<210> 308
<211> 403
<212> DNA
<213> Homo sapiens

<220>
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<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (368)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (375)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (388)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (389)
<223> n equals a,t,g, or c

<400> 308
gcggacggnc ngngaaggtg cttaagcggc tgcgacttca gaagcgaggc acaggcggtg 60
tggacacggc tgcggtgggc ggggtcttcg acgtctccaa cgctgaccgc ctgggcttct 120
cagaggtgga gctggtgcag atggtggtgg acggagtgaa gctgctcatc gagatggagc 180
agcggctgga gcagggccag gccatcgacg acctcatgcc tgcccagaaa tgaagcccgg 240
cccacacccg acaccagccc tgctgcttcc taacttattg cctgggcagt gcccaccatg 300
cacccctgat gttcgccgtc tggcgagccc ttagccttgc tgtnagagat tccgttcaac 360
cttggtanaa tttanttttt tgatgggnna agatatgctg atg 403

<210> 309
<211> 559
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<400> 309
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tctagaacta gtggatcccc cgggctgcag gaattcggca cgaggtttat ctcaaggcct 120
gagtagccgg taacaaacga gggttcccgg gattggaccg acgcagccat gcctctgcga 180
cttgatatca aaagaaagct aactgctaga tctgatcgag ttaagagtgt ggatctgcat 240
cctacagagc catggatgtt ggcaagtctt tacaatggca gtgtgtgtgt ttggaatcat 300
gaaacacaga cactggtgaa gacatttgaa gtatgtgatc ttcctgttcg agctgcaaag 360
tttgttgcaa ggaagaattg ggttgtgaca ggagcggatg acatgcagat tagagtgttc 420
aattacaata ctctggagag agttcatatg tttgaagcac actcagacta cattcgctgt 480
attgctgttc atccaaccca gcctttcatt ctaactagca gtgatgacat gcttattaag 540
ctctgggact gggataaaa 559

<210> 310
<211> 521
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (227)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (245)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (494)
<223> n equals a,t,g, or c

<400> 310
ggagatgtnt cgctccgtgg ccttagctgt gctcgcgcta ctctctcttt ctggcctgga 60
ggctatccag cgtactccaa agattcaggt ttactcacgt catccagcag agaatggaaa 120
gtcaaatttc ctgaattgct atgtgtctgg gtttcatcca tccgacattg aagttgactt 180
actgaagaat ggagagagaa ttgaaaaagt ggagcattca gacttgnctt tcagcaagga 240
ctggnctttc tatctcttgt actacactga attcaccccc actgaaaaag atgagtatgc 300
ctgccgtgtg aaccatgtga ctttgtcaca gcccaagata gttaagtggg atcgagacat 360
gtaagcagca tcatggaggt ttgaagatgc cgcatttgga ttggatgaat tccaaattct 420
gcttgcttgc tttttaatat tgatatgctt atacacttac actttatgca caaaatgtag 480
ggttataata atgntaacat ggacatgatc ttctttataa t 521

<210> 311
<211> 591
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (51)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (52)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (528)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (537)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (557)
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<220>
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<222> (563)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (571)
<223> n equals a,t,g, or c

<400> 311
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ggattcctga agctgacagc attcgggccg agatgtctcg ctccgtggcc ttagctgtgc 120
tcgcgctact ctctctttct ggcctggagg ctatccagcg tactccaaag attcaggttt 180
actcacgtca tccagcagag agtggaaagt caaatttcct gaattgctat gtgtctgggt 240
ttcatccatc cgacattgaa gttgacttac tgaagaatgg agagagaatt gaaaaagtgg 300
agcattcaga cttgtctttc agcaaggact ggtctttcta tctcttgtac tacactgaat 360
tcacccccac tgaaaaagat gagtatgcct gccgtgtgaa ccatgtgact ttgtcacagc 420
ccaagatagt taagtgggat cgagacatgt aagcagcatc atggaggttt gaagatgccc 480
gcatttggat tggatgaatt caaattctgc ttgcttggtt tttaatantg atatgcntat 540
acacttacct ttatgcncaa aanggtaggg ntataataat ggtaacatgg g 591

<210> 312
<211> 584
<212> DNA
<213> Homo sapiens

<220>
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<222> (4)
<223> n equals a,t,g, or c

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<222> (14)
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<220>
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<222> (20)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (33)
<223> n equals a,t,g, or c

<220>
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<222> (35)
<223> n equals a,t,g, or c

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<222> (259)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (262)
<223> n equals a,t,g, or c

<220>
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<222> (299)
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<222> (310)
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<222> (327)
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<222> (329)
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<222> (330)
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<222> (350)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (365)
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<220>
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<220>
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<222> (508)
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<220>
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<220>
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<222> (535)
<223> n equals a,t,g, or c

<220>
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<222> (553)
<223> n equals a,t,g, or c

<220>
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<222> (576)
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aaaaaaaaaa aaaagggcgg ccgttctaga ggatccaagc ttacgtacgc gtgcatgcna 120
cgtcatagct cttctatagt gtcacctaaa ttcaattcac tggccgtcgt tttacaacgt 180
cgtgactggg aaaaccctgg cgttacccaa cttaatcgcc ttgcagcaca tccccctttc 240
gccagctggc gtaatagcna anaggcccgc accgatcgcc cttcccaaca gttgcgcanc 300
ctgaatggcn aatgggacgc gccctgnann ggcgcattaa gcgcggcggn tgaggtggtt 360
acgcncagcg tgaccgctac acttgccagt gccctagcgn ccgctccttt cgctttcttc 420
cctncctttc tcgccangtt cgccggcttt ccccgtcaag ctctaaatcg ggggctccct 480
ttagggttcc gatttagtgc tttacggnac cttcgacccc aaaaaanttg attanggtga 540
tggttcacgt aantgggcca tcgcccttga tagacnggtt tttc 584

<210> 313
<211> 763
<212> DNA
<213> Homo sapiens

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<222> (12)
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<220>
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<222> (52)
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<222> (331)
<223> n equals a,t,g, or c

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<222> (372)
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<222> (496)
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<220>
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<222> (530)
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caattcactg gccgtcgttt tacaacgtcg tgactgggaa aaccctggcg ttacccaact 180
taatcgcctt gcagcacatc ccccttttcgc cagctggcgt aatagcgaag aggcccgcac 240
cgatcgccct tcccaacagt tgcncagcct gaatggcgaa tgggacgcgc cctgtancgg 300
cgcattaagc gcggcgggtg tggtggttac ncgcagcgtg accgttacac ttgccagcgc 360
cctagcgccc gntcctttcg ctttcttccc ttcctttctc gccacgttcg ccggctttcc 420
ccgtcaagct ntaaatcggg ggctcccttt agggttccga tttagtgctt tacggcacct 480
cgaccccaaa aaactngatt agggtgatgg ttcacgtagt gggccatngn cctgatagac 540
ggtttttcgc cctttgacgt tggagtccac gttcttaata gtggactntt gttccaaact 600
ggaacaacac ttaaccctat ctcgggctat tcttttgatt nataagggat tttccnatt 660
tcgggcctat tggttnaaaa aatgaagctt gttttaacaa aaaatttaac gcgnaatttt 720
accaaaaatn nttaaacggc ttanaattta aggggggcc ctt 763

<210> 314
<211> 761
<212> DNA
<213> Homo sapiens

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tcatanctct cctatagtgt cacctaaatt caatncactg gccgtcgttt tacaacgtcg 180
tgactgggaa aaccctggcg ttacccaact taatcgcctt gcaanacatc ccccttttcgc 240
cagctggngt natancnaaa aggcccgcac cgatcgccct tcccaacagt tgcgcancct 300
gaatggcaaa tgggacgcgc cctgttacgg cgcattaanc ccggngggtg tggtggttac 360
ccccaangtt naccgctaca cttgcnagcg ccctagngcc cgctcctttc gctttcttcc 420
cttcctttct cgccaanttc ngccggnttt ccccgtcaan ctctaantcg gggggcccctt 480
tanggttcca atttatgctt tacggcaccn caacccaaaa aacttnnnta aggtnatggt 540
ccacntatgg gccatcncct aataaanggt tttcccccctt ngaaattgga atccanttct 600
taaaagggaa nctgttccaa atggaaaaaa anccaaccct atcncgggct ntncctngan 660
ttanaaaggg aattnggnca attccggcct antgggttta aaaaattgaa actgaattta 720
aanaaaaatt taaacgcaaa attntaaaaa aaattntttta a 761

<210> 315
<211> 540
<212> DNA
<213> Homo sapiens

<220>
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<222> (47)
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<222> (484)
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<220>
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<222> (488)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (504)
<223> n equals a,t,g, or c

<220>
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<222> (528)
<223> n equals a,t,g, or c

<400> 315
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aaaagggcgg ccgctctaga ggatccaagc ttacgtacgc gtgcatgcna cgtcatagct 120
cttctatagt gtcacctaaa ttcaattcac tggccgtcgt tttacaacgt cgtgactggg 180
aaaaccctgg cgttacccaa cttaatcgcc ttgcagcaca tccccctttc gccagctggc 240
gtaatagcga anaggcccgc accgatcgcc cttcccaaca gttgcgcagc ctgaatggcg 300
aatgggacgc gccctgtagc ggcgcattaa gcgcggcggg tgtggtggtt acgcgcagcg 360
tgaccgntac acttgnaagc gccctaacgc ccgntccttt cgctttcttc ccttcctttc 420
tnccacgttc gnccggtttc ccgtcaagct ctaaatcggg ggctccttta agggtccnaa 480
ttantggntt tacgggacct tgancccaaa aaaacttgat ttaggggnga agggttcacg 540

<210> 316
<211> 513
<212> DNA
<213> Homo sapiens

<220>
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<222> (468)
<223> n equals a,t,g, or c

<220>
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<222> (478)
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<222> (483)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (496)
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<400> 316
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tattatttct gaagcctaac tgcaagactg atttctgaga acaagtaaag aactggaata 120
cttatttttc atataaaaat ctaaatgtgt taataaatca tttcatacaa aagtacatta 180
ttaaataacc acattattaa aataaaaaaa aaaaaaaaag ggcggccgct ctagaggatc 240
ccaagcttac gtacgcgtgc atgcnacgtc atagctcttc tatagtgtca cctaaattca 300
attcactggg ccgtcgtttt acaacgtcgg tgactgggaa aaccctggcg ttacccaact 360
taatcgcct tgcagcacat ccccctttcg ccagctggcg taatagcgaa gaggcccgcn 420
ccgatcgccc ttcccaacag ttgcgcatgc tgaatggcga atgggacncg ccctgtancg 480
ggngcattaa agcgcngcgg gtgtggtggt tac 513

<210> 317
<211> 389
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (31)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (60)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (70)
<223> n equals a,t,g, or c

<220>
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<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (75)
<223> n equals a,t,g, or c

<220>
<221> misc feature
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<223> n equals a,t,g, or c

<220>
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<222> (111)
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<223> n equals a,t,g, or c

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<222> (282)
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<222> (296)
<223> n equals a,t,g, or c

<220>
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<222> (342)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (349)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (351)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (357)

<223> n equals a,t,g, or c

<400> 317
gcccacgcnt ccgaaaaaaa aaaaaaaaaa naaaaaaaaa aaaaaaaaaa aaaaaaaaan 60
gggcggccgn tntanaggat ccaagcttac gtacgcgtgc atgcnacgtc ntagctcttc 120
tatagngtca cctaaattca attcactggc cgtcgtttta caacgtcgtg actgggaaaa 180
ccctggcgtt acccaactta atcgccttgc agcacatccc cctttcgcca gctggcgtaa 240
tagcgaanag gcccgcaccg atcgcccttc ccaacagttg cncagcctga atggcnaatg 300
ggacgcgccc tgtagcggcg cattaagcgc ggcgggtgtg gnggttacnc ncagcgngac 360
cgttacactt gccagcgccc tagcgcccg 389

<210> 318
<211> 388
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

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<222> (3)
<223> n equals a,t,g, or c

<220>
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<221> misc feature
<222> (143)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (144)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (146)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (150)
<223> n equals a,t,g, or c

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<222> (154)
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<220>
<221> misc feature
<222> (159)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (160)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (163)
<223> n equals a,t,g, or c

<220>
<221> misc feature
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (171)
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<221> misc feature
<222> (174)
<223> n equals a,t,g, or c

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<222> (196)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (198)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (223)
<223> n equals a,t,g, or c

<220>
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<222> (226)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (227)
<223> n equals a,t,g, or c

<220>
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<222> (234)
<223> n equals a,t,g, or c

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<222> (240)
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<222> (314)
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<220>
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<222> (366)
<223> n equals a,t,g, or c

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<222> (368)
<223> n equals a,t,g, or c

<220>
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<222> (377)
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<400> 318
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ctctaatacg actcactata gggaaagctg gtacgcctgc aggtaccggt ccggaattcc 120
cgggtcgacc cacgcgtccg gtnnanaccn atgnggggnn agntctcngg nggnaaggaa 180
aatcgtgcaa agaggnanta atgaatgtgg atcacgagga tanccnntta gtgnaggaan 240
tncatcgttt gggtntaaaa aatgctgatg gaaagttaan tgtgaaaatt ggggtcctct 300
ttcgtgatga taantgagcc aacctctttg aagcattggt aggaactctt aaagctgtna 360
aacgananaa gaatgtncat atccagga 388

<210> 319
<211> 418
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (235)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (240)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (285)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (380)
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<220>
<221> misc feature
<222> (391)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (392)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (396)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (401)
<223> n equals a,t,g, or c

<400> 319
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tttgttttca agatggtgtt atcttttgaa ttcttgataa atgactgttt ttttctgcct 120
aatagtaact ggttaaaaaa caaatgttca tatttattga ttaaaaatgt ggttgcttaa 180
ttcctaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaagggcg gccgntctan 240
aggatccaag cttacgtacg cgtgcatgcg acgtcatagc tcttntatag tgtcacctaa 300
attcaattca ctggccgtcg ttttacaacg tcgtgactgg gaaaaccctg gcgttaccca 360
acttaatcgc cttgcagcan atccccccttt nnccanctgg ngaataccaa aaggcccg 418

<210> 320
<211> 684
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (41)
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<222> (71)
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<220>
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<222> (251)
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<220>

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<222> (570)
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<222> (594)
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<220>
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (684)
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<400> 320
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cacgcgtccg natcccccagt gtgaggttaa tgagcaaaat tggtctttgg ggcccttttt 120
gtccaagccc cactgaaagg cctcttcaga aaactattat ctttaaagcc ctactttaac 180
tccttaattc cagcatacag ctaaaactgg atgtatattc tggcaagtaa aggctgagga 240
ctcctcttta ntcctcagat ctagataact catgacattt tatttgacca acatagcaca 300
tgatgagata tcaaggtaat taaaatagca tgcttgaaaa aaaatacgta atctgtttca 360
cctgtaactg tttaagccaa taaacttttc aaaatttaaa aaaaaaaaaa aagggcggcc 420
gctctagagg atccaagctt acgtacgcgt gcatgcgacg tcatagctct tctatagtgt 480
cacctaaatt caattcactg gccgtcgttt tacaacgtcg tgactgggaa aaccctggcg 540
ttacccaact taatcgcctt gcagcacatn cccctttcgc agctggcgta atancnaaga 600
ggcccnaccg atcgcccttt ccaacagttg cgcagcctga atggcgaatg ggacgcgccc 660
tgtagccggn cattaagcgc cggn 684

<210> 321
<211> 216
<212> DNA
<213> Homo sapiens

<220>
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<222> (2)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (108)
<223> n equals a,t,g, or c

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<222> (155)
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<220>
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<222> (183)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (190)
<223> n equals a,t,g, or c

<220>
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<222> (192)
<223> n equals a,t,g, or c

<220>
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<222> (202)
<223> n equals a,t,g, or c

<400> 321
cncnagaccn nctttggaaa cgccngacta tagggaaagc tggtacgcct gcaggtaccg 60
gtccggaatt cccgggtcga cccacgcgtc cgcccggctg gaggctgnca gaaggatgct 120
ggggataagc ccttaggcac cagcttagac acctncaaga accaggcccc gctgatgcaa 180
ganggcagan cngataccca tnagagcccc gagaat 216

<210> 322
<211> 557
<212> DNA
<213> Homo sapiens

<220>
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<222> (98)
<223> n equals a,t,g, or c

<220>
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<222> (286)
<223> n equals a,t,g, or c

<220>
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<222> (394)
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<220>
<221> misc feature
<222> (415)
<223> n equals a,t,g, or c

<220>
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<222> (509)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (545)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (546)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (550)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (555)
<223> n equals a,t,g, or c

<400> 322
ggtccagaag cctccccgac cccccaagct atttgctcan attaacaaat taaagtgcct 60
gaagcataat tcatttttgt atctgtggta acaaaacntt aaccaaaaga ttttctgtcc 120
agaagcctcc ccgacccccc aagctatttg ctcacattaa caaattaaag tgcctgaagc 180
ataattcatt ctttacctgt atactaaaaa ccctgttgta ttgatttttt tataataagc 240
ctttttacct ctgtgtaaaa aatatatata caagtgtatg atgtanattt tagttcttaa 300
cttttttttta tggtttctaa tatgtatgac caatgtagcc attgctttaa aatgtaccgt 360
gtaaatataa acacatccta tcagaaaaaa aaanaaaaaa gggcggccgc tctanaggat 420
ccaagcttac gtacgcgtgc atgcgacgtc atagctcttc tatagtgtca cctaaattca 480
attcactggc cgtcgtttta caacgtcgng actgggaaaa accctgggcg ttacccaact 540
taatnnggcn ttgcngg 557

<210> 323
<211> 145
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
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<222> (15)
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<222> (142)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (145)
<223> n equals a,t,g, or c

<400> 323
ggtancngca gtacngtcng aattcccggc tctagagatc caagcttacg tactgngcat 60
gcacgtcata gctcttctat agtgtcacct aaattcaatt cactggccgt cgttttacaa 120
cgtcgtgact gggaaaacnn tntan 145

<210> 324
<211> 353
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
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<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<220>
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<222> (110)
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<222> (133)
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<220>
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<220>
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<222> (232)
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<220>
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<222> (334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (349)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (353)
<223> n equals a,t,g, or c

<400> 324
nnnattcatc atagccacca tcaccctnct taacctctac ttntacctac gcctaatcta 60
ctccacctca atcacactac tccccatatc tagcaacgta aaaataaaan gacagtttga 120
acatacaaaa ccnaccccat tcctcnccac actcatcgcc cttaccacgc tactcctacc 180
tatctccccc tttatactaa taatcttata aaaaanaana aaaangggcg gncgntctag 240
aggatccaag cttacgtacg cgngcatgcg acgtcatagc tcttctatag ggtcacctaa 300
attcaattca ctggccgtcg ttttacaacg tngngactgg gaaaacccng gcn 353

<210> 325
<211> 553
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<222> (513)
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tcactgcagt ctcaaccttc cggactcaag tgatggtccc gcttcagcta cttgggaggc 120
tgaggcagga gaatcgcttg aacccgggag gcggaggttg cggggagccg ggattgtgcc 180
actgcactcc accctagagt gagactccct ctcaaaaaaa aaaaaaaaaa actcgagggg 240
gggcccggta cccaattcgc cctatagtga gtcgtattac aattccactg gccgtcgttt 300
tacaacgtcg tgactgggaa aaccctgggc gttacccaac ttaatcgcc ttgcagcana 360
tccccctttcg ccagctgggt naattagcga agaggcccgc accgantcgc cttcccaaca 420
gttgcgcagt ggaatggcga atggcaantg taagcttaaa ntttgtttaa aattcgcgtt 480
naaatttttg gttaaatcag ctcatttttt aancataagg ccgnaatcgg gaaaatccct 540
tattaaatcc aaa 553

<210> 326
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<212> DNA
<213> Homo sapiens

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<220>
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<222> (434)
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<222> (435)
<223> n equals a,t,g, or c

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<222> (437)
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<220>
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<222> (464)
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atcattgcta gaactgagag accagcctgg ctagaacttc agggcgttcc attcattctt 120
tcagtaaatg tttgcagcac atgtgttaca tgtcaggcag tgaaaccccc cacagcagcc 180
ttccctctca gaggatacat ttgtaaccat tacacagtca tcagaggaat aatttttttt 240
aatcaccagt gtgcacacag tcatggagtt gggtattccc agctaccagg gaggctgagg 300
tgggaggatt gcttgatgcc aggagttagg gaatatagtg caccgtgatt ggacttgcga 360
atagccactg cactgcggcc tggacgacgt agtgataccc tgactcttat aaataaataa 420

atgaataaac acannanaaa aaaaaaaggg cggccgctct agangatcca agcttacgta 480
cgccgtgcat gcgacgtcat aactcttcta taggggcacc taaattcaat tcactggccc 540
gccgtttaca acgtctgact gggaaaaccc tggcgttacc caacttaatc gncttgcaga 600
anatcccctt ttnccaactg gnggnata 628

<210> 327
<211> 416
<212> DNA
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<223> n equals a,t,g, or c

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<222> (285)
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<222> (297)
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<223> n equals a,t,g, or c

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<221> misc feature
<222> (300)
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<222> (305)
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<220>
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<222> (334)
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<220>
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<222> (349)
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<220>
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<400> 327
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ggtgtgattt acttatgtaa attatgtaca aatttaagtt caatgaaaca ctgatttaat 120
gtactgaaag gtaaatagta ccatagtgaa ttattttctg tcttgcctta ggtttatttt 180
tattatcttc aatattagaa taaatgctaa attattttca aaaaaaaaaa aaaaaaaaaa 240
aaaaaaaaaa gggnggangn tctanaggat ccaagcttac gtacncgtgc atgcaangnn 300
atagntcttc tatagtgtca cctaaattca attnactggc cgtcgattna caacgtcgtg 360
actgggaaaa ccctggcgtt acccaactta atcgccttgc agcacatccc cctttn 416

<210> 328
<211> 629
<212> DNA
<213> Homo sapiens

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<220>
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<223> n equals a,t,g, or c

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<222> (233)
<223> n equals a,t,g, or c

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<222> (242)
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<220>
<221> misc feature
<222> (243)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (244)
<223> n equals a,t,g, or c

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<222> (257)
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<222> (394)
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<220>
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<220>
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<222> (598)
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<220>
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<222> (619)
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<400> 328
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ggcgttcagt cataatccca cagatggtag cttcgcccca ttggctcctc agccaagcac 120
atacaccaaa tgtctgaacc tgcggttcct ctcgtactga gcaggattac catggcaaca 180
acacatcatc agtagggtaa aactaacctg tctcacgacg gtctaannna aanaaaaaaa 240
annnaaaaaa gaattcnaaa agcttctcga nagtncttct aaancggccg cgggcccatc 300
nattttccac ccgggtgggg taccaggtaa gtgtacccaa ttcgccctat agtgagtcgt 360
attacaattc actggccgtc gttttacaac gtcntgactg ggaaaaccct ggcgttaccc 420
aacttaatcg ccttgcagca catccccctt tcgccagctg gcgtaatanc gaaaaaggcc 480
gcancgatcg cccttcccaa cagtttgcgc ancctgaaat ggcgaatgga aatcaatttt 540

taantgttta atgntgttaa actactgaat ccnaattgtt tggtgttttt taaaatcnca 600
gtcccaaggg tcatttcang gccctcaat 629

<210> 329
<211> 458
<212> DNA
<213> Homo sapiens

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<220>
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<220>
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<222> (452)
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tccaagctta cgtacgcgtg catgcnacgt catagntctg ctatagtgtc acctaaattc 120
aattcactgg ccgtcgtttt acaacgtcgt gactgggaaa accctggcgt tacccaactt 180
aatcgccttg cagnacatcc ccctttcgcc agatggcgta atagcnaaaa ggcccgcncc 240
gatcgccctt cccaacagtt gngcagnctg aatggcnaan gggangcgcc ctgtngcggc 300
gcattaagcg cggcgggtgt ggtggttacg cnnagggtna ccgctncact tnccancgcc 360
ctagcgcccg gncctttcgn tttcttccct tcctttctcg ccacnttcgc cggntttccc 420
cgtcaagctc taaatcgggg ggtccctttt anggttcc 458

<210> 330
<211> 453
<212> DNA
<213> Homo sapiens

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<222> (113)
<223> n equals a,t,g, or c

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<222> (134)
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<220>
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<400> 330

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aaaaaaaagg gcggccgntc tanaggatcc aagcttacgt acgcgtgcat gcnacgtcat 120
agctcttcta tagngtcacc taaattcaat tcactggccg tcgttttaca acgtcgtgac 180
tgggaaaacc ctggcgttac ccaacttaat cgccttgcag cacatccccc tttcgccagc 240
tggcgtaata gcgaaaaggc ccgcaccgat cgcccttccc aacagttgcg cagcctgaat 300
ggcgaatggg acgcgccctg tancggngca ttaagcgcgg cgggtgtggt ggttacgcgc 360
agcgtgaccg ttacacttgc cagcgcccta ncgcccgctc ctttcgtttc ttcccttnct 420
ttctcgnnac gttcgccggt ttccccgtta agn 453

<210> 331
<211> 498
<212> DNA
<213> Homo sapiens

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<222> (361)
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<220>
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<400> 331
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ggcggccgct ctagaggatc caagcttacg tacgcgtgca tgcgacgtca tagctcttct 120
atagtgtcac ctaaattcaa ttcactggcc gtcgttttac aacgtcgtga ctgggaaaac 180
cctggcgtta cccaacttaa tcgccttgca gcacatcccc ctttcgccag ctggcgtaat 240
agcgaagagg cccgcaccga tcgcccttcc caacagttgc gcagcctgaa tggcgaatgg 300
gacgcgccct gtacggcgca ttaagcgcgg cgggtgtggt ggttacgccc agcgtnaccg 360
ntacacttgc cagcgcccta ncgcccgct ccntttcgct ttctttccct ttcctttctt 420
tggncacgtt tcnccgggtt tttcccccgt tnaaagcctt ttaaaatcng ggggggcttc 480
ccntttaaag gggttccc 498

<210> 332
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<212> DNA
<213> Homo sapiens

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<222> (317)
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<220>
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<222> (328)
<223> n equals a,t,g, or c

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<222> (335)
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<220>
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<220>
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<222> (347)
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ctttatccct aacatcactg tgaataatag tggatcctat acctgccacg ccaataactc 120
agtcactggc tgcaacaggg ccacagtcaa gacgatgcat agtcactgag ctaagtccag 180
tagtagcaaa gccccaaatc aaagccagca agaccacagt cacaggagat taaggactct 240
gtggaacctg gacctggttc cacaaaatgg acactggnat cttccatccc gttggttctt 300
tcaaaaaacc aggggtnttc ccgtcctngg ggggnttnga aggtttntcc ccnggggnaa 360
aaaaccancc ttnnggnntt aaancncttt tnaangnggg ggggtttttt gggangngtt 420
ttgggntntn ggggttttta aacccntttg 450

<210> 333
<211> 434
<212> DNA
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<221> misc feature
<222> (405)
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<222> (425)
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tggcattgtg attggagtag tggccctggt tgctctgata gcagtagccc tggcatgtnt 120
tctgcatttc gggaagaccg gcagctcagg accactccaa tgacccacct aacaagatga 180
atgaagttac ttatnctacc ctgaactttg aagnccanca acccacacaa ccaacttcag 240
cctccccatc cctaacagcc acagaaatna tttattccag aagtaaaaaa ncagtnatga 300
aacctggtcc tgctcnctgc agtgcctgat gtntttncaa gtctctcacc ccccatcact 360
aggaaattcc tttcccctgt tngggtaaag ggtggggana gaaancaatt tctcctactc 420
tcctncctat agga 434

<210> 334
<211> 612
<212> DNA
<213> Homo sapiens

<220>

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<222> (455)
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<221> misc feature
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<400> 334
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tccccaaggt gcagtggcca ccccgtgaac tttgttctgc ctgccacaat gaacgcctgg 120
atgtgcccgt gtgggacgtg gaagccaccc tcaacttcct caaggcccac ttctccccaa 180
gcaacatcat cctggacttc cctgcagctg ggtcaacttg cccgagggat gtgcagaatg 240
tggcaagccg ccccaaactg gcgatgggag ccctggagct ggaaagccgg aattcaactc 300
tggaccctgg gaagcctgag atgatgaagt cccccacaaa caccacccca catgtgccgg 360
ctganggacc tgaggcaagt cgacccccga agcttgcacc ctggcctaaa acttgaccag 420
gccaggaacc ctctgancac aatggcaaaa gcttnaaagg aatgaaccag gaancaagcc 480
gntttgggca atngggnact ttgagccaaa gccgaagaac accanggggc ttggatttgn 540
tttggcttta atttccaagg ggttnaaaaa aaaaaacccg gcntttttg gggggccccc 600
tttttnggaa gg 612

<210> 335
<211> 462
<212> DNA
<213> Homo sapiens

<220>
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<222> (337)
<223> n equals a,t,g, or c

<220>
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<222> (358)
<223> n equals a,t,g, or c

<220>
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<222> (428)
<223> n equals a,t,g, or c

<220>
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<222> (456)
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<400> 335
gcccacgcgt ccgcatgttt ccaggagggg ccatgggggt cagggtggtt ttgagagagc 60
agggtaagga aggaatgtgc tagaagtgct cctagtttct tgtaaaggaa gccagagttg 120
acagtacaaa gggtcgtggc cagccctgca gcttcagcac ctgccccacc cagagtggga 180
gtcaggtgga gccacctgct gggctccccc agaactttgc acacatcttg ctatgtatta 240
gccgatgtct ttagtgttga gcctctggat tctggggtct gggccantgg ccatagtgaa 300
acctgggaat gaatggtact tgaacatctg ggcttgncag ccacaaggaa aggccaancc 360
catgtacccc aancattctt gccaaccctt gctctgggca ttcccggaag ggtcgatcct 420
taggcttngc tttaaaagcc cttgcccttg cctttntctt gg 462

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<220>
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<222> (196)
<223> n equals a,t,g, or c

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<222> (204)
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<222> (335)
<223> n equals a,t,g, or c

<220>
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<222> (336)
<223> n equals a,t,g, or c

<400> 336
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aatgaattaa gaagcttcaa aaggcagctc tcctgaaagc ttctcccaaa aaacacctgg 120
tactaagggt actgctgctg ctgctgctgc tgctgctgct gctgctaaan tccancnaaa 180
aanatcaccg cccganttaa aagntccncc caaaagtcct gcccaaaaan cccaggccaa 240
aaacacgctg ctccaaactc anaggtcaaa actcncccaa aaccctctcc aangctctgc 300
aaaaagctta ttgcatcnta aaattataag gtctnn 336

<210> 337
<211> 303
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<222> (192)
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<220>
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<222> (223)
<223> n equals a,t,g, or c

<220>
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<222> (249)
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<222> (256)
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<221> misc feature
<222> (257)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (267)
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agacaatcct taccatgtga naggnggnat gactgtnatg gcatgagann ngcatcacta 60
tgananngan aactcagtag aagataatgg caagtccaga ctggggatat gatgacaaan 120
atggtcctga acaatggagc aagctgtatc ccattgccaa tggaaatnac cagtcccctg 180
ttgatattnn gnccagtgaa accaaacatg acacctctct ganacctatt agtgtctcct 240
acaacccanc cacagnnaaa gaaattntcc aatgtggggg cattccttcc atgtaaattt 300
ttg 303

<210> 338
<211> 460
<212> DNA
<213> Homo sapiens

<220>
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<222> (13)
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<222> (315)
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<222> (409)
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<222> (423)
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<222> (424)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (433)
<223> n equals a,t,g, or c

<220>
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<222> (454)
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<400> 338
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ttcagaaaaa gaaaactcag tagaagataa tggcaagtcc agactgggga tatgatgaca 120
aaaatggtcc tgaacaatgg agcaagctgt atcccattgc caatggaaat aaccagtccc 180
ctgttgatat taaaaccagt gaaaccaaac atgacacctc tctgaaacct attagtgtct 240
cctacaaccc agccacagcc aaagaaatta tcaatgtggg gcattccttc catgtaaatt 300
ttgaggacaa cgatnaccga tcaagtgctg aaaggtggtc ctttctctga cagctcaggc 360
tctttcagtt ccattttcac tggggcagtc aaaatgagca tgggttaana acattccagt 420
ggnntgggag tcnaaatatt ctggccgagc tttnacgtaa 460

<210> 339
<211> 416
<212> DNA
<213> Homo sapiens

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<222> (147)
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<222> (268)
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<222> (378)
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<222> (403)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (407)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (411)
<223> n equals a,t,g, or c

<220>
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<222> (415)
<223> n equals a,t,g, or c

<400> 339

ggtgccgatt cctgccctgc cccgaccgcn agncggacca tntcccatca ntgggggtac 60
ggcaaacaca acggacctaa gcactggcat aaggacttcc ccattgccaa gggaagagcg 120
ccagtncccc tgttganatc gacactncat acagccaagt ntgaaccctt ccntgaaagc 180
ccctgtttgt ttcctatgaa tcaagcaact tccctgagga tcctcaacaa tggtcatgct 240
ttcaacgtgg gagtttgnat gactctnnag gacaaagcag tgcttcaagg gaaggacccc 300
tgggttgggc actttacaga ttggttttca ttttttcaat tttcaatggg ggtttcaatt 360
tgatgggaca aggtttcnga ggcataattg tgggttaaaa agnaatntgg ntgcng 416

<210> 340
<211> 362
<212> DNA
<213> Homo sapiens

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<220>
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<222> (76)
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<220>
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<222> (117)
<223> n equals a,t,g, or c

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<220>
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<222> (170)
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<220>
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<220>
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<220>
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<220>
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<222> (310)
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<220>
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<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (335)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (338)
<223> n equals a,t,g, or c

<220>
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<222> (339)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (357)
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<400> 340
ggcanagtga atgttgctgg agaacaaggc cagcattttt ggaggaggac tgcctgcccc 60
ataccaggtc aaacanttgc acctgcactg gtccgacttg ccatataagg gctcggngca 120
cagcctcgaa tggggngcac tttgccatgg gagatgcaca tagtacatgn gaaaagagaa 180
ggggacatcg aggaatgtga naanagggcc caggaaccct gaagacgaaa ttncggtgct 240
gggccttttt ggtgggaggc tgggaaccca ggtgaaacga gggctttcca gccactggtg 300
ggaggcactn tcttaatatt ccccaaacct nnggntgnng cattacgatt ggcaganagg 360
ca 362

<210> 341
<211> 328
<212> DNA
<213> Homo sapiens

<220>
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<222> (63)
<223> n equals a,t,g, or c

<220>
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<222> (98)
<223> n equals a,t,g, or c

<220>
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<222> (152)
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<222> (171)
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<220>
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<222> (184)
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<220>
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<222> (186)
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<220>
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<222> (195)
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<220>
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<222> (276)
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<220>
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<222> (280)
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<220>
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<222> (303)
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<220>

<221> misc feature
<222> (311)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (325)
<223> n equals a,t,g, or c

<400> 341
aagcctttca agatgatccc cggagtggtg gatggggtct tcctgcccag gcaccccccag 60
ganctgctgg cctctgccga ctttcagcct gtccctanca ttgttggtgt caacaacaat 120
gaattcggct ggctcatccc caaggtcatg angatctatg atacccagaa ngaaatggac 180
aganangcct cccangctgc tctgcagaaa atgttaacgc tgctgatttg cctcctacat 240
ttggtgacct gctgaaggaa gaattcattt ggggganaatn gggatcccca aaaccccccaa 300
acncatttcc nggaaaataa ttgcngaa 328

<210> 342
<211> 140
<212> DNA
<213> Homo sapiens

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<220>
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<222> (11)
<223> n equals a,t,g, or c

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<222> (33)
<223> n equals a,t,g, or c

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<222> (70)
<223> n equals a,t,g, or c

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<222> (129)
<223> n equals a,t,g, or c

<220>
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<222> (130)
<223> n equals a,t,g, or c

<220>
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<222> (140)
<223> n equals a,t,g, or c

<400> 342
aangggactt nccagtgatg cacccaagag ctntttatcc ccaacatcac tgtgaataat 60
aggggatccn atncgtgcca agcccataac tctacactgg ccttaatagg agcacagtca 120
cgaatatcnn agtctatgcn 140

<210> 343
<211> 477
<212> DNA
<213> Homo sapiens

<220>
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<222> (396)
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<220>
<221> misc feature
<222> (421)
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<220>
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<222> (435)
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<220>
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<222> (463)
<223> n equals a,t,g, or c

<400> 343
gggacagcag agctgacagt cacagcagcc ctgacaagag agttcctgga gcccaagctc 60
ttctccacag aggacaagca ggcagcagag accatggggt ccccttcagc ctgtccatac 120
agagtgtgca ttccctggca ggggctcctg ctcacagcct cgcttttaac cttctggaac 180
ctgccaaaca gtgcccagac caatattgat gtcgtgccgt tcaatgtcgc agaagggaag 240

gaggtccttc tagtagtcca taatgagtcc cagaatcttt atggctacaa ctggtacaaa 300
ggggaaaggg tgcatgccaa ctatcgaatt ataggatatt gtaaaaaata taagtcaaga 360
aaatgcccaa ggcccgacac aacgtcgaga gacatntacc caatggaacc ttgtgttcca 420
nacgtaccac atgcncagga tttttcctca ctataaaana aanttggatg agaatac 477

<210> 344
<211> 389
<212> DNA
<213> Homo sapiens

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<220>
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<221> misc feature
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<222> (144)
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<220>
<221> misc feature
<222> (145)
<223> n equals a,t,g, or c

<220>
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<222> (159)
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<220>
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<222> (201)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (379)
<223> n equals a,t,g, or c

<400> 344
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ctccaccgcg gtgcgaccgc tctagaacta gtggatcccc cgggctgcag gaattcggca 120
cgaggccggc cggggctggc acgnncgccg cggcggggnc tggaggcgcg accgggcgcc 180
cccgagcggg aatcagaacg ncgccgaggg gaccagatca acgccagcaa gaacgaggag 240
gacgcgggaa aaatgttcgt tggtggcctg agctgggata ctagcaaaaa agatttaaaa 300
gactatttta ctaaatttgg agaggtcgtt gactgtacaa taaaaatgga tcccaacact 360
ggacggtcaa gagggtttng gtttatcct 389

<210> 345
<211> 152
<212> DNA
<213> Homo sapiens

<220>
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<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (34)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (42)
<223> n equals a,t,g, or c

<220>
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<222> (48)
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<220>
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<222> (61)
<223> n equals a,t,g, or c

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<222> (87)
<223> n equals a,t,g, or c

<220>
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<400> 345
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nggnctgctg ggtgttctgg tcgncgnccc ggatggtggt ttcgatttat ccgatgccct 120
tnctgacaat gaaaacaaga aacccactgc aa 152

<210> 346
<211> 634
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (38)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (284)
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<220>
<221> misc feature
<222> (491)
<223> n equals a,t,g, or c

<220>
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<222> (586)
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<220>
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<222> (588)
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<220>
<221> misc feature
<222> (598)
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<220>
<221> misc feature
<222> (613)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (621)
<223> n equals a,t,g, or c

<400> 346
tntgtctgaa tgtaaatcac cttctgagcc gntgattncc aagagggttg gtcttattca 60
catatcccaa gtcatctcag aaattgatgg taacaggatg accttgagcc aagaaggagc 120
acaagattcc ttccctcttc agcagaagat cttggtttgc tctttgatgc tcttgatcag 180
gcagttgaaa atcaaagagg tcactctggg gaagttatat gaagcctaca gtaaagtctg 240
tcgcaaacag caggtggcgg ctgtggacca gtcagagtgt ttgncacttt cagggctctt 300
ggaagccagg ggcattttag gattaaagag aaacaaggaa acccgtttga caaaggtgtt 360
tttcaagatt gaagagaaag aaatagaaca tgctctgaaa gataaagctt taattggaaa 420
tatcttagct actggattgc cttaaattct tctcttacac cccacccgaa agtattcaag 480
ctggcattta nagagctaca ggcttcattt taaggcttta cacattcggg cctgaaaaca 540
aatatgacct tttttacttg aagccaatga attttaatct atagancntt aaaattanca 600
cagaataata tcnttggggc ntactatttt accc 634

<210> 347
<211> 363
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (228)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (233)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (242)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (268)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (319)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (322)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (323)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (324)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (325)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (328)
<223> n equals a,t,g, or c

<400> 347
ggcacgagag gaatatggag aggctgactc ttgcttgtgg tggggtggcc ctgaattctt 60
ttgaggacct aagtcctgac tgcttgggac atgcaggact tgtatatgag tatacattgg 120
gagaagttca cctttattga gaagtgtaac aaccctcgtt ctatcacatt attgatcaaa 180
ggaccaaata agcccacact tagatcaaag atgcagtaaa gggatggnct tgnagggctg 240
tncaaaaatg ctgttgatga tggctgtntg gttccgggtg ctggtgctgt ggaagtggca 300
atggcagaag ccctggatna annnnaantc catgtaaagg gcaaggcaca gttggggtcc 360
agc 363

<210> 348
<211> 388
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (205)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (339)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<400> 348
aattcggcac gagctgaagg ctagcaaacc gagcgatcat gtcgcacaaa caaatttact 60
attcggacaa atacgacgac gaggagtttg agtatcggtt agtgctggcg cgggagcaat 120
agcgagggtc gtgagctttg gccgctgagg gcacaaggaa ttagtaacag gaactgaggc 180
gatagaattg gcgcatgcgt atganacatg tcatgctgcc caaggacata gccaagctgg 240
tccctaaaac ccatctgatg tctgaatctg aatggaggaa tcttggcgtt cagcagagtc 300
agggatgggt ccattatatg atccatgaac cagaacctna aatnttgctg ttccggggcc 360
attnccagga accaaggaat tnagtttc 388

<210> 349
<211> 194
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (38)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (51)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (57)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (60)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (67)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (69)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (74)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (83)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (91)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (124)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (127)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (140)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (180)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (191)
<223> n equals a,t,g, or c

<400> 349
gagttgttgc ctgggctgga cgtggttttg tctgctgngc ccgctcttag ngctctngtn 60
taatttnang cagngcgcca gcnggatggt ncacaagcag atatactact cggacaagta 120
cttngangaa cactacgagn accgggatgg tatgttaccc agagaacttg acaaacaagn 180
acctaaaact natc 194

<210> 350
<211> 524
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (85)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (98)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (101)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (240)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (258)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (484)
<223> n equals a,t,g, or c

<400> 350
ttaaccttnt naanggnaca aagtctggnt ctccaccagg tggaggaccg ctcctagcaa 60
ctagtgggtc ccccgggcct gcagnaattc ggcagtgncg naaagcccta cggcgtcact 120
gcaatgtgct ggaactggga gcaagtgnca gcggctggac ggcatcctga gtcgagacca 180
ttccgattca cgggcgcggc aacttcccca cgctcgagct gcagccgagc ctgtatcgtn 240
aaggtggtgc ggcggcgnct tgccgagaag cgcatcggcg tccgcgacgt gcgcctcaac 300
ggctcggcag ccagccatgt cctgcaccag gacagcggcc tgggctacaa ggacctggac 360
ctcatcttct gcgccgacct gcgcggggaa ggggagtttc agactgtgaa ggacgtcgtg 420
ctggactgcc tgttggactt cttacccgag gggtgaaca aagagaagat cacaccactc 480
acgntcaagg aagcttatgt gcagaaaatg gttaaagtgt gcaa 524

<210> 351
<211> 352
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (261)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (291)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (295)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (328)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<400> 351
gccaaatcct ttgaatactg ngccaggatt tttaagcaac actttatgga cagcagaata 60
ccttgcttaa tcgtagctgc aaagtcagac ctgcatgaag ttaaacaaga atacagtatt 120
tcacctactg atttctgcag gaaacacaaa atgcctccac cacaagcctt cacttgcaat 180
actgctgatg cccccagtaa ggatatcttt ggtaaattga caacaatggc catgtatccc 240
catgcccggt tacgctgtat ntgcacctgc aacaggtgta cattttgcat ntgtnaaaac 300
ttcctcaact tatactttgc tgcaaatntg gtaaaagaac aaaaatcntt tc 352

<210> 352
<211> 632
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<400> 352
agnnaganac caaccctcac taaagggaac aaaagctgga gctccaccgc ggtgcggccg 60
ctctagaact agtggatccc ccgggctgca ggaattcggc acgaggtgtg tcagaacaat 120
cttgaatcat gaagctacta accagagccg gctctttctc gagattttat tccctcaaag 180
ttgcccccaa agttaaagcc acagctgcgc ctgcaggagc accgccacaa cctcaggacc 240
ttgagtttac caagttacca aatggcttgg tgattgcttc tttggaaaac tattctcctg 300
tatcaagaat tggtttgttc attaaagcag gcagtagata tgaggacttc agcaatttag 360
gaaccaccca tttgctgcgt cttacatcca gtctgacgac aaaaggagct tcatctttca 420
agataacccg tggaattgaa gcagttggtg gcaaattaag tgtgaccgca acaagggaaa 480
acatggctta tactgtggaa tgcctgcggg gtgatgttga tattctaatg gagttcctgc 540
tcaatgtcac cacagcacca gaatttcgtc gttgggaagt agctgacctt cagcctcagc 600
taaagattga caaagctgtg gcctttcaga at 632

<210> 353
<211> 440
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (435)
<223> n equals a,t,g, or c

<400> 353
ctttaactcc accattagca cccaaagcta agattctaat ttaaactatt ctctgttctt 60
tcatggggaa gcagatttgg gtaccaccca agtattgact cacccatcaa caaccgctat 120
gtatttcgta cattactgcc agccaccatg aatattgtac ggtaccataa atacttgacc 180
acctgtagta cataaaaacc caatccacat caaaaccccc tccccatgct tacaagcaag 240
tacagcaatc aaccctcaac tatcacacat caactgcaac tccaaagcca cccctcaccc 300
actaggatac caacaaacct acccaccctt aacagtacat agtacataaa gccatttacc 360
gtacatagca cattacagtc aaatcccttc tcgtccccat ggatgacccc cctcagatag 420
gggtcccttg accancatcc 440

<210> 354
<211> 609
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (139)
<223> n equals a,t,g, or c

<400> 354
aancnganac naaccctcac taaagggaac aaaagctgga gctccaccgc ggtgcggccg 60
ctctagaact agtggatccc ccgggctgca ggaattcggc acgagccgga gggtgtgtgt 120
tgggcaaagc cggaggagna ggaggacgat tgttttacgg atcccgtgat cggcccgtcc 180
ttctcccctt tccccctcc ctaccgcccc tgtcccgccg gggagcggcg gcggccttgg 240
actttgctgt ctttcctcgc ggagacagat ttcaacacta cacttgcaca atgtctttga 300
aaccaagagt agtagatttt gatgaaacat ggaacaaact tttgacgaca ataaaagccg 360
tggtcatgtt ggaatacgtc gaaagagcaa catggaatga ccgtttctca gatatctatg 420
ctttatgtgt ggcctatcct gaaccccttg gagaaagact ttatacagaa actaagattt 480
ttttggaaaa tcatgttcgg catttgcata agagagtttt ggagtcagaa gaacaagtac 540
ttgttatgta tcataggtac tgggaagaat acagcaaggg tgcagactat atggactgct 600
tatataggt 609

<210> 355
<211> 466
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (368)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (451)
<223> n equals a,t,g, or c

<400> 355
gctccattat tgatcggttc atgcagaata attgtgtgcc caagaagatg ctgcagctgg 60
ttggtgtcac tgccatgttt attgcaagca aatatgaaga aatgtaccct ccagaaattg 120
gtgactttgc ttttgtgact gacaacactt atactaagca ccaaatcaga cagatggaaa 180
tgaagattct aagagcttta aactttggtc tgggtcggcc tctacctttg cacttccttc 240
ggagagcatc taagattgga gaggttgatg tcgagcagca tactttggcc aaatacctga 300
tggaactaac tatgttggac tatgacatgg tgcactttcc tccttctnaa attgcagcag 360
gagctttntg cttagcactg aaaattctgg gataatggtg aatggttatg cagcacctgg 420
ctaagaatgt agtcatgggt aaatcaaggn nttacaaagc acatgc 466

<210> 356
<211> 447
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (269)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (375)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (380)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (436)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (440)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (446)
<223> n equals a,t,g, or c

<400> 356
ggtgatgagg aggcttgtcc agaggacaag ggaccccagg acccacaggc actggcgctg 60
gacacccaga tccctgcaac ccctggaccc aaacccctgg tccgcaccag ccgggagcca 120

gggaaggacg tcacgacctc agggtactcc tccgtcagca ccgcaagtcc cacaagctcc 180
gtggacggtg gcttgggggc cctgccccaa cctacctcag tgctgtccct ggacagtgac 240
tcgcacacac agccctgcca ccatcaggnc aggaagtcat gtttacagtg tcgtccccca 300
agtcccccgg agagcagtgt tccccagcaa caggtgaagc ggataaacta tgcatacaca 360
gtgaagagga ggacntgaan ctgggcttgt gaagctgtaa gtgtgtcagc acatttgcgc 420
agtggatttt actgangggn tgaagng 447

<210> 357
<211> 510
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (453)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (486)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (491)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (496)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (500)
<223> n equals a,t,g, or c

<400> 357
tnccacgcgt ccgcccacgc gtccgcccac gcgtccgcag attccctccg tcgccgccaa 60
gatgatgtgc ggggcgccct ccgccacgca gccggccacc gccgagaccc agcacatcgc 120
cgaccaggtg aggtcccagc ttgaagagaa agaaaacaag aagttccctg tgtttaaggc 180
cgtgtcattc aagagccagg tggtcgcggg gacaaactac ttcatcaagg tgcacgtcgg 240
cgacgaggac ttcgtacacc tgcgagtgtt ccaatctctc cctcatgaaa acaagccctt 300
gaccttatct aactaccaga ccaacaaagc caagcatgat gagctgacct atttctgatc 360
ctgactttgg acaaggccct tcagccagaa gactgacaaa gtcatcctcc gtctaccaga 420
gcgtgcactt gtgatcctaa aataagcttc atntccgggc tgtgcccctt ggggtggaag 480

gggcangatt ntgcanctgn ttttgcattt 510

<210> 358
<211> 240
<212> DNA
<213> Homo sapiens

<400> 358
ggtcttgcac tcatgagctg tccccacatt aggcttaaaa acagatgcaa ttcccggacg 60
tctaaaccaa accactttca ccgctacacg accgggggta tactacggtc aatgctctga 120
aatctgtgga gcaaaccaca gtttcatgcc catcgtccta gaattaattc ccctaaaaat 180
ctttgaaata gggcccgtat ttaccctata gcaccccctc tacctcctct agagccaaaa 240

<210> 359
<211> 340
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (320)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (331)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (335)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (338)
<223> n equals a,t,g, or c

<400> 359
ggcacgagct cataaggaaa tctaccccta tgtcatccag gaacttagac caactttaaa 60
tgaactggga atctccactc cggaggaact gggccttgac aaagtgtaaa ccgcatggat 120
gggcttcccc aaggatttat tgacattgct acttgagtgt gaacagttac ctggaaatac 180
tgatgataac atattacctt atttgaacaa gttttccttt attgagtacc aagccatgta 240
atggtaactt ggactttaat aaaaaggaaa tgagtttgaa ccggaaaaaa aaaaaaaaaa 300
aaaaaaaaaa aaaagaaaan aaagaaggga nagnnaanaa 340

<210> 360
<211> 501
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (147)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (192)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (242)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (244)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (455)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (465)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (474)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (491)
<223> n equals a,t,g, or c

<400> 360
cccacgcgtc cgcccacgcg tccgatgcct atcatatagt aaaacccagc ccatgacccc 60
taacaggggc cctctcagcc ctcctaatga cctccggcct agccatgtga tttcacttcc 120
actccataaa gctcctcata ctaaggnnta ctaaccaaca cactaaccat ataccaatga 180
tggcgcgatg tnacacgaag aaagcacata ccaagggcac cacacaccac ctgtccaaaa 240
angncttcga tacgggataa tcctatttat tacctcagaa gtttttttct tcgcaggatt 300
ttctgagctt ttacactcca gcctagccct acccccaact aagaaggnac tggccccaac 360
aagnatcacc cgctaaatcc ctanaatcca ctcctaaaca ctccgtatat cgatcaggat 420
atcatcactg actcacatat ctaatagaaa aaacngaaac aatantcanc atgnttatta 480
aatttatggt ntctatttac c 501

<210> 361
<211> 393
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (357)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (359)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (367)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<400> 361
gccccattat tcctagaacc aggcgacctg cgactccttg acgttgacaa tcgagtagta 60
ctcccgattg aagcccccat tcgtataata attacatcac aagacgtctt gcactcatga 120
gctgtcccca cattaggctt aaaaacagat gcaattcccg gacgtctaaa ccaaaccact 180
ttcaccgcta cacgaccggg ggtatactac ggtcaatgct ctgaaatctg tggagcaaac 240
cacagtttca tgcccatcgt cctagaatta attcccctaa aaatctttga aatagggccc 300
gtatttaccc tatagcaccc cctctacccc ctctagagcc aaaaaaaaaa aaaaagntnc 360
aagnttnaaa aaactgaaaa tcagaaaagn ttt 393

<210> 362
<211> 664
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (308)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (535)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (551)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (567)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (642)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (660)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (662)
<223> n equals a,t,g, or c

<400> 362
gagtaggtct acaagacgct acttccccta tcatagaaga gcttatcacc tttcatgatc 60
acgccctcat aatcattttc cttatctgct tcctagtcct gtatgccctt ttcctaacac 120
tcacaacaaa actaactaat actaacatct cagacgctca ggaaatagaa accgtctgaa 180
ctatcctgcc cgcatcatcc tagtcctcat cgccctccca tccctacgca tcctttacat 240
aacagacgag gtcaacgatc cctcccttac catcaaatca attggccacc aatggtactg 300
aacctacnaa gtacaccgac tacggcggac taatcttcaa ctcctacata cttccccatt 360
attcctagaa ccaggcgacc tgcgactcct tgacgttgac aatcgagtag tactcccgat 420
tgaagccccc attcgtataa taattacatc acaagacgtc ttgcactcat gagctgtccc 480
cacattaggc ttaaaaacag atgcaattcc ccgacgtcta aaccaaacca ctttnaccgg 540
tacacgaacc nggggtatta ctacggncaa tgctctgaaa tctggggagc aaaaccacag 600
gttcatgccc atcgtcctag aaataaattc ccctaaaaat cnttgaaaaa aggggcccgn 660
antt 664

<210> 363
<211> 595
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
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<222> (467)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (485)
<223> n equals a,t,g, or c

<220>
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<220>
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<222> (557)
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<220>
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<222> (559)
<223> n equals a,t,g, or c

<220>
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<222> (568)
<223> n equals a,t,g, or c

<400> 363
gcgcaagtag gtctacaaga cgctacttcc cctatcatag aagagcttat cacctttcat 60
gatcacgccc tcataatcat tttccttatc tgcttcctag tcctgtatgc ccttttccta 120
acactcacaa caaaactaac taatactaac atctcagacg ctcaggaaat agaaaccgtc 180
tgaactatcc tgcccgccat catcctagtc ctcatcgccc tcccatccct acgcatcctt 240
tacataacag acgaggtcaa cgatccctcc cttaccatca aatcaattgg ccaccaatgg 300
tactgaacct acgagtacac cgactacggc ggactaatct tcaactccta catacttccc 360
ccattattcc tagaaccagg cgacctgcga ctccttgacg tttgacaatc gagtagtact 420
cccgattgaa gcccccattc gtataataat tacatcacaa gacgtnnttg cactcatgag 480
ctgtncccac attaagctta aaaacagatg cattnccgga cgtctaaacc aaaccacttt 540
caccgataca cnaaccngng ggtatacnac cggtcaatgc ttctgaaatc ttgtg 595

<210> 364
<211> 441
<212> DNA
<213> Homo sapiens

<400> 364
acaagacgct acttcccccta tcatagaaga gcttatcacc tttcatgatc acgccctcat 60
aatcattttc cttatctgct tcctagtcct gtatgccctt ttcctaacac tcacaacaaa 120
actaactaat actaacatct cagacgctca ggaaatagaa accgtctgaa ctatcctgcc 180
cgccatcatc ctagtcctca tcgccctccc atccctacgc atcctttaca taacagacga 240
ggtcaacgat ccctcccttt accatcaaat caattgggcc accaatggta ctgaacctac 300
gagtacaccg actacggcgg actaatcttc aactcctaca tacttccccc attattccta 360
gaaccaggcg acctgcgact ccttgacgtt gacaatcgag tagtactccc gattgaagcc 420
cccattcgta taataattaa c 441

<210> 365
<211> 367
<212> DNA
<213> Homo sapiens

<220>
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<222> (347)
<223> n equals a,t,g, or c

<220>
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<222> (362)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (363)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (367)
<223> n equals a,t,g, or c

<400> 365
catacttccc ccattattcc tagaaccagg cgacctgcga ctccttgacg ttgacaatcg 60
agtagtactc ccgattgaag cccccattcg tataataatt acatcacaag acgtcttgca 120
ctcatgagct gtccccacat taggcttaaa aacagatgca attcccggac gtctaaacca 180
aaccactttc accgctacac gaccgggggt atactacggt caatgctctg aaatctgtgg 240
agcaaaccac agtttcatgc ccatcgtcct agaattaatt cccctaaaaa tctttggaaa 300
tagggcccgt atttacccta tagcaccccc tctacccccct ctagagncaa aaaaaaaaaa 360
annagnn 367

<210> 366
<211> 460
<212> DNA
<213> Homo sapiens

<220>
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<222> (51)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (154)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (211)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (322)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (336)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (340)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (355)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (356)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (378)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (411)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (413)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (415)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (453)
<223> n equals a,t,g, or c

<400> 366
ttttcgaggc caacgatccc tcccttacca tcaaatcaat tggccaccaa nggtaccgaa 60

cctacgagta caccgactac ggcggactaa tcttcaactc ctacatactt cccccattat 120
tcctagaacc aggcgacctg cgactccttg acgntgacaa tcgagtagta ctcccgattg 180
aaacccccat tcggataata attacataca nggacgtctt gcactcatga gctgccccac 240
attaggctta aaaacagatg caattcccgg acgtctaaac caaaccacta tcaccgctac 300
acgaccgggg gtatactacg gncaatgctc tgaaanctgn ggagcaaacc acagnntcat 360
gcccatcggc ctagaatnaa ttcccctaaa aatctttgaa atagggcccg nantnaccct 420
atagcacccc ctctaccccc tctagagcca aanaaaaaaa 460

<210> 367
<211> 610
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<400> 367
gcaagntgac acnaaccctc actaaaggga acaaaagctg gagctccacc gcggtgcggc 60
cgctctagaa ctagtggatc ccccgggctg caggaattcg gcacgaggga atggcggctt 120
ccatctctga ggcgagcgac gctatggatc ccacagtggt ttgctaagaa ggccattttc 180
aactctccac tggaggctgc tatggcgttc cctcacctgc agcagcccag ctttctactg 240
gctagcctga aagctgactc tataaataag ccctttgcac agcagtgcca agacttggtt 300
aaagtcattg aggactttcc agcaaagtct gaaccaatca gagtccttgt gactggagca 360
gctggtcaaa ttgcatattc actgctgtac agtattggaa atggatctgt ctttggtaaa 420
gatcagatgt catcgcaaca gataaagaag acgttgcctt caaagacctg ggatgtggcc 480
attcttgtgg gctccatgcc aagaagggaa ggcatggaga gaaaagattt actgaaagca 540
aatgtgaaaa tcttcaaatc ccagggtgca gccttagata aatacggcaa gaagtcagtt 600
aaaggttatt 610

<210> 368
<211> 548
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (370)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (378)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (412)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (429)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (471)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (490)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (495)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (528)
<223> n equals a,t,g, or c

<400> 368
ggcacgagga gcactctatt tattgtactg tgaataatga tgaaggagag tggagtggcc 60
caccacctga atgcagagga aaatctctaa cttccaaggt cccaccaaca gttcagaaac 120
ctaccacagt aaatgttcca actacagaag tctcaccaac ttctcagaaa accaccacaa 180
aaaccaccac accaaatgct caaggtacag agactccatc agttcttcaa aaacacacca 240
cagaaaatgt ttcagctaca agaaccccac caactcctca gaaacccacc acagtaaatg 300
tcccagctac aatagtcaca ccaacacctc agaaacccac cacattaatg ttccagttac 360
aggagtctcn tcaacacntc aagncacacc tagtaatgtt tcagttacag gncctaccac 420
ttttcgganc ccaccggggc aatgttcgnc accattcccg cgcgttcggc ntttctttca 480
aaaccttttn caagnccttt tgcgttagat cctgtggcat gttttgtnca cggcccttac 540
ggccaggt 548

<210> 369
<211> 538
<212> DNA
<213> Homo sapiens

<220>
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<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (423)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (466)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (521)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (531)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (538)
<223> n equals a,t,g, or c

<400> 369
gatggcgcgg anccgggacg cgcgtacgcc ctgctgcttc tcctgatctg ctttaacgtt 60
ggaagtggac ttcacttaca ggtcttaagc acaagaaatg aaaataagct gcttcctaaa 120
catcctcatt tagtgcggca aaagcgcgcc tggatcaccg cccccgtggc tcttcgggag 180
ggagaggatc tgtccaagaa gaatccaatt gccaagatac attctgatct tgcagaagaa 240
agaggactca aaattactta caaatacact ggaaaaggga ttacagagcc accttttggt 300
atatttgtct ttaacaaaga tactggagaa ctgaatgtta ccagcattct tgatcgagaa 360
gaaacaccat tttttctgct aacaggttta cgctttggat gcaagaggga acaatgtaga 420
ganacccttt agagctacgc attaagggnt cttgatatcc aattgncaac ggaaccagtg 480
gttcacacag ggatgtcttt gttggggcct gttgaagagt ngaggtgcag nacatacn 538

<210> 370
<211> 538
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (401)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (492)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (500)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (536)
<223> n equals a,t,g, or c

<400> 370
gagctcagtc cccatcccga agcacagggc aggacgtcgc ggcggagtgg ggaagcgagg 60
agtccgtggc cgggagcttg gaggctgagt ttgagaaagc tgcagaggag gttaggcacc 120
ttaagaccaa gccatcggat gaggagatgc tgttcatcta tggccactac aaacaagcaa 180
ctgtgggcga cataaataca gaacggcccg ggatgttgga cttcacgggc aaggccaagt 240
gggatgcctg gaatgagctg aaagggactt ccaaggaaga tgccatgaaa gcttacatca 300
acaaagtaga agagctaaag aaaaaatacg ggatatgaga gactggattt ggttactgtg 360
ccatgtgttt atcctaaact gagacaatgc cttgtttttt nctaataccg tggatggtgg 420
gaatccggga aaataaccag ttaaaccagc tactcaaggc tgctcaccat acggctctaa 480
cagattaggg gntaaaacgn ttactgactt ccttgagtag ttttacctga aaccantt 538

<210> 371
<211> 224
<212> DNA
<213> Homo sapiens

<220>
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<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (48)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (59)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (68)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (90)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (108)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (113)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (123)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (141)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (171)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (192)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (204)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (215)
<223> n equals a,t,g, or c

<400> 371
gcctgtgcct acacaccacc ntcgcngaaa gctgtgcagc gcattgcnga gtctcaccng 60
cagtctanca gcaatttgaa tgagaaccan gcctcagagg aggagganga gcngggggag 120
ctncgggagc tgggttatcc nagagaggaa gatgaggagg aagaggagga ngatgaagaa 180
gaggaagact angaggacag ccangctgaa gaccngagcg gaga 224

<210> 372
<211> 459
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (52)
<223> n equals a,t,g, or c

<220>
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<222> (90)
<223> n equals a,t,g, or c

<220>
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<222> (105)
<223> n equals a,t,g, or c

<220>
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<222> (139)
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<220>
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<222> (140)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (176)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (208)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (328)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (394)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (429)
<223> n equals a,t,g, or c

<400> 372
aacttnccca atgccgaact gggaggcccc tttaaccaga tgaacggagt gnccggaaat 60
ggcatgaaca acattgacat gactggagan aagaagtcgt tgganctccc atatcccagc 120
agctttgctc ccgtctctnn acctagaaac cagaccttca cttacatggg caagtnctcc 180
attgaccctc agtaccctgg tgccagcngc tacccagaag gcataatcaa tattgtgagt 240
gcaggcatct tgcaaggggt cacttcccca gcttcaacca cagcctcatc cagcgtcacc 300
tctgcctccc ccaacccact ggccacanga cccctgggtg tgtgcaccat gtcccagacc 360
cagcctgacc tggaccacct gtactctccg ccancgcctc ctcctcctta ttctggctgt 420
gcaggaganc tctaccagga cccttctgcg ttcctgtta 459

<210> 373
<211> 422
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (27)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (47)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (60)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (66)
<223> n equals a,t,g, or c

<220>
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<222> (70)
<223> n equals a,t,g, or c

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<222> (78)
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<220>
<221> misc feature
<222> (87)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (105)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (267)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (331)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (351)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (359)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (393)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (401)
<223> n equals a,t,g, or c

<400> 373
ggcagacctg aggcccatcc ccaaggngcc cagccgtagc ttcaggntct ccgccagggn 60
ccctcncggn tgcttctngt ttttaanact tccagatcga tcctntcctc ggtaccgtgg 120
gctttgggtc tggcctccac gggtgggcct tcaccctgaa agcagtttgc cgagaatgta 180
tgtgagccaa gttcgccgcc aagggggagg gccagttggg agcctgccga gcgggccaag 240
aaagtagagg acatgatgaa gaagctntgg ggtgacaggt gagccccggg gaatatggtg 300
ggggattcct gaaaactggg ggtagtggca ncaacgtagg ggcgtggtgt nctattcana 360
attggttcaa gcccacaagt tttgcccaaa atnttccctt ngggaccaac ttcccaagta 420
at 422

<210> 374
<211> 342
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
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<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (20)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (292)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (301)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (305)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (325)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<400> 374
gcanaacatc agcgcnnacn gganataaaa agattatcca cagagcattc cagtgtatca 60
gagtatcatc cagccgatgg ctatgcgttc agtagcaaca tttacacaag aggatcccac 120
ctggaccaag gggaagctgc tgttgctttt aagccaactt ctaatcgcca tattagattg 180
aaattatgaa ccactccaaa acacaaccca agaaatatgc ccaatcccag ttatgacttt 240
gtttgccagg ggaaacaaca gttgagctct ccgggttcct taaggaatga tntttttaga 300
naatnccttg aaatgaatcg gaaancatgg tngaaaaagt tt 342

<210> 375
<211> 387
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (162)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (305)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (335)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (365)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (374)
<223> n equals a,t,g, or c

<400> 375
ggcagagctc tgcgcgcant ccgcttgact cagctcaccg agattctgtc agggggtgtt 60
tatattgaga agaacgataa gctttgtcac atggacacaa ttgactggag ggacatcgtg 120
agggaccgag atgctgagat agtggtgaag gacaatggca gnaagctgtc ccccctgtca 180
tgaggtttgc aaggggcgat gctggggtcc tggatcagaa gactgccaga cattgaccaa 240
gaccatctgt gcttcctcag tgtaattggt cactgctttg gggcccaacc ccaaccagtg 300
gttgncatga tgagtgtggc cgggggttgt ttcanggccc cttcagggac acagactgtt 360
tttgnntggc cggnatttca atggaca 387

<210> 376
<211> 492
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (110)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (203)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (318)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (333)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (336)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (405)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (416)
<223> n equals a,t,g, or c

<220>
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<222> (440)
<223> n equals a,t,g, or c

<220>
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<222> (444)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (448)
<223> n equals a,t,g, or c

<400> 376
ggcacgagaa gcaaactcaa agcatttggg tcaaaacatc ctgattgttt tatacatggt 60
ttggatgata aattcagtaa agatacaggc ataatcctta tatgcaaatn agttgatggg 120
tattttctat ggtgatttca gacaaggaac ctgcaggtca ctctggaaga tggttacatt 180
gaattgagca ccagcgatag ggncggccca atttttaaat ctccacagac gtatatggat 240
ggtttactgc attatgtatc tgtaataagc gacaactctg ggtgagtcga ataaatactt 300
ctgtcagagc tgtgagtnga gttttactct ctnttngttt taatggaatt ttctggtgtc 360
tttttgcaaa aaatttgtcc ttgattacca aaaatacttt cactnataag tcttgncctt 420
ctttcctttt ttcccatatn caantttnct tcataaaaaa aataaacttg ccacacatgg 480
gtgggcttca tt 492

<210> 377
<211> 336
<212> DNA
<213> Homo sapiens

<220>
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<222> (4)

<223> n equals a,t,g, or c

<220>
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<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (66)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (70)
<223> n equals a,t,g, or c

<220>
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<222> (116)
<223> n equals a,t,g, or c

<220>
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<222> (163)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (197)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (227)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (229)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (231)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (249)
<223> n equals a,t,g, or c

<220>
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<222> (280)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (292)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (308)
<223> n equals a,t,g, or c

<220>
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<222> (325)
<223> n equals a,t,g, or c

<400> 377
gacngtaccg tcccnaatcc cgggtcgacc cacgcntccg aagcagcagt tagcccgccg 60
cccgcntgtn tgtccccaga gccatggaga gagccagtct gatccagaag gccaanctgg 120
cagagcaggc cgaacgctat gaggacatgg cagccttcat ganaggcgcc gtggagaagg 180
gcgaggagtc tcctgcnaag agcgaaacct gctctcagta gcctatnana ncgtggtggg 240
cggccagang gctgcctgga gggtgctgtc cagtattgan cagaaaagca angaggaggg 300
gttcgganag gagaaggggc ccgangtgcg ttgaat 336

<210> 378
<211> 488
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

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<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (20)
<223> n equals a,t,g, or c

<220>
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<222> (35)
<223> n equals a,t,g, or c

<220>
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<222> (43)
<223> n equals a,t,g, or c

<400> 378
cngtcagtna cggtaccggn aattcccggg tgcgnaccca cgncgtgccg ccgagaccgc 60
tgccttgctc ggaagggggc gagcggctgc tgcccaccca gaagcagccc gggggcggcc 120
aggtcaactc cagccgctac aagacggagc tgtgccgccc ctttgaggaa aacggtgcct 180
gtaagtacgg ggacaagtgc cagttcgcac acggcatcca cgagctccgc agcctgaccc 240
gccaccccaa gtacaagacg gagctgtgcc gcaccttcca caccatcggc ttttgcccct 300
acgggccccg ctgccacttc atccacaacg ctgaagagcg ccgtgccctg gccggggccc 360
gggacctctc cgctgaccgt ccccgcctcc agcatagctt tagtttgctg ggtttcccag 420
tgccgctgcc accgccgctg ccaccgggct gctggacagc ccacgtccat caacccaacc 480
cctatttt 488

<210> 379
<211> 398
<212> DNA
<213> Homo sapiens

<220>
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<222> (46)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (124)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (385)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (386)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (394)
<223> n equals a,t,g, or c

<400> 379
ggcacgaggg ggcctcccgc tgtggccacc tctgccgcgg ccgcgncgcc gcgtcctacc 60
ctgccctccg tgcctctctg ctgccgcagt cgctggcggc ggcggccgcg ttcccgacgc 120
gcantaacag ccaggagtcc aaaactactt acctggaaga ccttccacca ccccctgagt 180
atgaattggc cccgtccaag ttagaagagg aagtggatga tgtctttctc attcgagctc 240
aaggactgcc ctgggtcatg gcactatggg aagatgtggc tttaactttt tttttccaga 300
cttgcagaat ccggcaacgg ttgagtaatg ggaattacat tttnctccct aaaaacaaga 360
gatgggggaa aacgtaaggg ggtnnntggc cttnaatt 398

<210> 380
<211> 455
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (315)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (365)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (421)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (442)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (447)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (448)
<223> n equals a,t,g, or c

<400> 380
atgccatggt gcggctggtc aagtgcgacg tctaccccctg ccccaacaca gtggactgct 60
tcgtgtcccg ccccaccgag aaaaccgtct tcaccgtctt catgctagct gcctctggca 120
tctgcatcat cctcaatgtg gccgaggtgg tgtacctcat catccgggcc tgtgcccgcc 180
gagcccagcg ccgctccaat ccaccttccc gcaagggctc gggcttcggc caccgcctct 240
cacctgaata caagcagaat gagatcaaca agctgctgag tgagcaggat ggctccctga 300
aagacatact gcgcncaacc ctggcacggg ggctgggctg gctgaaaaaa acgaccgtgc 360
tcggntgtga tgccacatac caggcaacct cccatcccac cccgaccttg cctgggcgaa 420
nccctccttc tccctgccgg tncccanngg ctcac 455

<210> 381
<211> 421
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (23)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (156)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (191)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (387)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (398)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (410)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (413)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (421)
<223> n equals a,t,g, or c

<400> 381
ntnngcgnct gcaggtcgaa cantagtgga tccaaagaat tcggcacgag tgggaacgag 60
gggtgaagcg gcccaggtga ggctcgccat ggccaaacag ctgcaggccc gaagctagac 120
gggatcgact acaacccctg ggtggagttt gtgaantggc cagtgagcat gacgtcgtga 180
acttgggcca nggcttcccg gatttcccac caccagactt tgccgtggaa gcctttcagc 240
acgctgtcag tggagacttc atgcttaacc agtacaccaa gacatttggt tacccaccac 300
tggacgagga tcctggcaat ttctttgggg gagctgctgg gtcaaggata agacccgttc 360
agggatgtgc tggtgactgt tggtggntat gggggccngt ttcaaaagcn ttnccaggcc 420
n 421

<210> 382
<211> 545
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (57)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (466)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (505)
<223> n equals a,t,g, or c

<400> 382
aaggnagaca caancctcac taaagggaac aaaagctgga gctccaccgc ggtgcgnccg 60
ctctagaact agtggatccc ccgggctgca ggaattcggc acgagcggcg gcggcggcgg 120
cggcccagtc ggtgtatgcc ttctcggcgc gcccgctggc cggcggggag cctgtgagcc 180
tgggctccct gcggggcaag gtactactta tcgagaatgt ggcgtccctc tgaggcacca 240
cggtccggga ctacacccag atgaacgagc tgcagcggcg cctcggaccc cggggcctgg 300
tggtgctcgg cttcccgtgc aaccagtttg ggcatcagga gaacgccaag aacgaagaga 360
ttctgaattc cctcaagtac gtccggcctg gtggtgggtt cgagcccaac ttcatgctct 420
tcgagaagtg cgaggtgaac ggtgcggggg cgcaccctct cttcgncttc ctgcgggagg 480
ccctgccagc tcccagcgac gacgncaccg cgcttatgac cgaccccaag ctcatcacct 540
ggtct 545

<210> 383
<211> 375
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (224)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (242)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (264)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (282)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (329)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (333)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (368)
<223> n equals a,t,g, or c

<400> 383
gctttcattg ccaagtcctt ctatgacctc agtgccatca gcctggatgg ggagaaagta 60
gatttcaata cgtctcgggg cagggccgtg ctgattgaga atgtggcttc gctctgaggc 120
acaaccaccc gggacttcac ccagctcaac gagctgcaat gccgctttcc caggcgcctg 180
gtggtccttg ggcttccctt gcaaccaatt tgggacatca gganaactgt caaaatgagg 240
anatcctgaa cagtctcaat tatnttccgt cctggggtgg gnataccaac ccccccttccc 300
ccttttttcca aaaattttaa ggttaaatng gcnaaaaaaa acatcctntt tttccccccta 360
ccttaaanga aaaac 375

<210> 384
<211> 530
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (178)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (354)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (361)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (386)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (415)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (426)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (436)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (515)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (527)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (529)
<223> n equals a,t,g, or c

<400> 384
gctcgtgccg tgagacacaa ccacccggga cttcacccag ctcaacgagc tgcaatgccg 60
ctttcccagg cgcctggtgg tccttggctt cccttgcaac caatttggac atcagagcag 120

gagagacaga agtagcaaac cctctttcga gatgtccctc cagccccaga agtacctnca 180
gcctcacacc atctcttcag cctagcaagt tgctggaggg agtctataac ctaccaggag 240
ccagccagcc atttgtatca agaaatagaa atctgcaggg tacagtggct cacacctata 300
atcccagcgc tttgggaggc taagttctag gacaaaggca aggaagaaaa gcangaactt 360
naaaatccaa ttcctttttgg gncttnaaat ttaaccttca agttcaaggg agctnaagta 420
aggcanaagg ccaaanggct ttttacttna acaacaacgg tgccaatttg gaaaggcaag 480
gccaaggcaa aaaacccagg ggcaagaagg aaaangggaa aaggggntnt 530

<210> 385
<211> 465
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (151)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (287)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (310)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (312)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (329)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (338)
<223> n equals a,t,g, or c

<220>
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<222> (347)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<220>
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<222> (373)
<223> n equals a,t,g, or c

<220>
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<222> (383)
<223> n equals a,t,g, or c

<220>
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<222> (438)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<400> 385
cacactcaag ttctttcctg ccagtgccga caggacggtc atcgattaca acggggaacg 60
cacgctggat ggttttaaga aattcctgga gagcggtggc caggatgggg caggggatga 120
tgacgatctc gaggacctgg aagaagcaga ngagccagac atggaggaag acgatgatca 180
gaaagctgtg aaagatgaac tgtaatacgc aaagccagac ccgggcgctg ccgagacccc 240
tcggggggct gcacaaccag cagcagcgca aggcttccga gccttgnggg ctcggtttga 300
aaagaagggn tngccgggaa acccagggna actctctnga agttganact ncancccctag 360
aaaacgtccg ttnaaccccg ttnctttctt ctgcttttcg ggtttttgga aaagggattc 420
atttccaggc aggccaanct tgttggggnn tgttcctgaa accat 465

<210> 386
<211> 733
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (606)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (621)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (689)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (703)
<223> n equals a,t,g, or c

<400> 386
gcggtgatca tgggggcccc gggctcgggc aagggcaccg tgtcgtcgcg catcactaca 60
cacttcgagc tgaagcacct ctccagcggg gacctgctcc gggacaacat gctgcggggc 120
acagaaattg gcgtgttagc caaggctttc attgaccaag ggaaactcat cccagatgat 180
gtcatgactc ggctggccct tcatgagctg aaaaatctca cccagtatag ctggctgttg 240
gatggttttc caaggacact tccacaggca gaagccctag atagagctta tcagatcgac 300
acagtgatta acctgaatgt gccctttgag gtcattaaac aacgccttac tgctcgctgg 360
attcatcccg ccagtggccg agtctataac attgaattca accctcccaa aactgtgggc 420
attgatgacc tgactgggga gcctctcatt cagcgtgagg atgataaacc agagacggtt 480
atcaagagac taaaggctta tgaagaccaa acaaagccag tcctggaata ttaccagaaa 540
aaaggggtgc tggaaacatt ctccggaaca gaaaccaaca agatttggcc ctatgtatat 600
gctttnctac aactaaagtt ncacaaagaa gccagaaagc tttaattact tcatgaggag 660
aaatgtgtgt aactattaat agtaagaang gcaaaccttc tantccttgg atttaaaact 720
ggttttctaa aac 733

<210> 387
<211> 180
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (61)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (123)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (133)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (151)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (153)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (159)
<223> n equals a,t,g, or c

<400> 387
nctttnatct ntgaagtgga tctacaatgg cttcagcagt gtnctccagt tcctaggact 60
ntacaagaaa tctggaaaac ttgtattctt caggcttggt taatgtcagg caaaaccact 120
gtngttgcac atngcttcaa aggtgcgcag ntngtgggnc aacattgttt cccaacactt 180

<210> 388
<211> 428
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (84)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (90)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (197)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (263)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (285)
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<220>
<221> misc feature
<222> (286)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (306)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (395)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (414)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (418)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (427)
<223> n equals a,t,g, or c

<400> 388
gggaacagta agaccgagga ccagcgcaac gaggagaagg cgcacgtgna ggccaacaaa 60
aagatcgaga agcagctgca gaangacaan caggtctacc gggccacgca ccgcctgctg 120
ctgctgggtg ctggagaatc tggtaaaagc accattgtga agcagatgag gatcctgcat 180
gttaatgggt ttaatgnaga cagtgagaag gcaaccaaag tgcaggacat caaaaacaac 240
ctgaaagagg cgattgaaac cantgtggcc gccatgagca acctnngtgc cccccgtgga 300
gctggncaac cccgagaaac cagttcagag tggactacat cctggagtgt tatgaacgtg 360
cctggntttt gacttccctc cggattctat gagcnggcaa ggtctgtgga ggtnaagntt 420
ctgctgna 428

<210> 389
<211> 454
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (181)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (184)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (209)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (240)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (283)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (287)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (292)
<223> n equals a,t,g, or c

<220>
<221> misc feature
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tagcaacccg aactttccag aagaactcaa gcctctctgc aagagcccaa tgcccaggag 180

ntanttcaga ggctggagga aatcgctgna ggacccgggg cacatgtgga aatctgtgcn 240
tacgctggcc tgtaccggat gctaaggggg cttgccactg gcnggcntcc cntccgcagc 300
aggggaagnc ttttcntcnt gcagaaaggg ccacccatga tattccattc cccagcagtt 360
caactaacnt ggttccattc gggaaggagc agccggggaa gnattgggtt gattggaagg 420
cttngnccca aatggtnctt tccctggcaa tttt 454

<210> 390
<211> 553
<212> DNA
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<222> (414)
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ttgctacctg gactttcgtt gaccatgctg tcccgggtgg tactttccgc cgccgccaca 180
gcgccccctc tctgaagaat gcagccttcc taggtccagg gaccctatgt actcggaact 240

gggcttatct tgtacgcttt atccaaagaa atatatgtga ttagcgcaga gaccttcact 300
gccctatcag tactaggtgt aatggtctat ggaattaaaa aatatggtcc ctttgttgca 360
gactttgctg ataaactcaa tgagcaaaaa cttgcccaac tagaagaggc gaanagngct 420
tccatccaac acatccagaa tgcaattgat acggagaagt cacaacaggc actggttcag 480
aagcgccatt acctttttgg atgtgcaaag gaataacatt gctatggctt tggaagttac 540
ttacccggga acg 553

<210> 391
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<212> DNA
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<222> (586)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (613)
<223> n equals a,t,g, or c

<400> 391
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acttagccaa gatgcctgag gaaacccaga cccaagacca accgatggag gaggaggagg 180
ttgagacgtt cgcctttcag gcagaaattg cccagttgat gtcattgatc atcaatactt 240
tctactcgaa caaagagatc tttctgagag agctcatttc aaattcatca gatgcattgg 300
acaaaatccg gtatgaaagc ttgacagatc ccagtaaatt agactctggg aaagagctgc 360
atattaacct tataccgaac aaacaagatc gaactctcac tattgtggat actggaattg 420
gaatgaccaa ggctgacttg atcaataacc ttggtactat cgccaagtct gggaccaaag 480
cgttcatgga agctttgcag gctggtgcag atatctctat gattggccag ttcggtgttg 540
gtttttattc tgcttatttg gttgctgaga aagtaactgt gatcancaaa cataacgatg 600
atgagcagta cgnttgggag tcctcagcag gg 632

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<211> 600
<212> DNA
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<222> (518)
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<222> (572)
<223> n equals a,t,g, or c

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<222> (587)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (590)
<223> n equals a,t,g, or c

<400> 392
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gctgctgggc agcgggaagc gaggccccag gtgtcactga cattcgagga cgtggctgtg 120
ctctttacct gggatgagtg gagaaagctg gctccttctc anagaaactt gtaccgggat 180
gtgatgctgg agaactatag gaacctggtc tcactgggac tctcatttac caaaccaaaa 240
gtcatctccc tgttgcagca aggagaagat ccctgggagg tggagaaaga cagttctggt 300
gtctcctctc taggatgtaa gagcacacct aaaatgacaa agtcaactca aactcaggat 360
tcatttcagg agcagataag gaaaagattg aaaagggatg aaccctggaa cttcatatca 420
gaaagatcct gcatatatga agagaaatta aagaaacagc aggacaaaaa tgaaaattta 480
caaataattt cagttgccca tacaaaaatc cttactgnag atagaagcca taaaaatgtt 540
gaatttgccc aaaacttcta cctgaaatca nncttcatta agcaccngan aattgcctaa 600

<210> 393
<211> 531
<212> DNA
<213> Homo sapiens

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<222> (267)
<223> n equals a,t,g, or c

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<220>
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<221> misc feature
<222> (512)
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<400> 393
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ggnccccccg gacagtggct ctgacggcgt tactgatggt gctgctcaca tctgtggttc 120
cagggcaggg ccactccaga gaattacctt ttccagggac ggcaggaatg ctacgcgttt 180
aatggtaaca gccagaagga catcctggag gagaaagcgg gcagtgccgg aacaggatgt 240
gcagacacaa cttacggagc tgggcgngcc catggaccct gcagcgccga gttccagcct 300
agggtggaat gttttccccc tccaagtagg gggcccttgg cagcaacaca anctgcttgt 360
ttggccaagt gacggntttt tacccaggca gcanngggtan tcctgtcaac tggattggag 420
gcacatttga ttttgcccgg ttagacatga nggggttggg ttcngttggt naaatntggg 480
ttgggaattt taatgaaaaa ggggggcaaa gnaattttaa agggggggttt t 531

<210> 394
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<212> DNA
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<222> (390)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (399)
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<400> 394
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cctacaaatc atccggccaa attatgagtt cattgtatta tgcgaatgct ttattttcta 120
aatatccagc ctcaagttcg gttttcgcta ccggagcctt cccagaacaa acttcttgtg 180
cgtttgcttc caaccccag cgcccgggct atggagcggg ttcgggcgct tccttcgccg 240
cctcgatgca gggcttgtac cccggcggng ggggcatggc gggccagagc gcggncggcg 300
tctacgcggc cggctatggg ctcgagccgn gttccttcaa catgcactgc gcgccctttg 360
agcagaaacc tctccggggt gngcccnggn gaattccgnc aagg 404

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<222> (149)
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<222> (172)
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agctgcacct tcacgtacct gctgggtgnn agngngtncc gggaggccgt tntgntcgnn 120
ccagncctgg aaacagcgcc tcgggatgnc cagctgatca aggagctggg gnttcggctg 180
ctctatgctg gcgttggaga ccagggccag ncctggccac aantnaggct gtgtcacctt 240
cgttctgaat gaccacagca tggccttcac tggagatgcc ctgttgatcc gtgggtgtng 300
gcggacagac tttcagcaag gctgttgcca agaccttgta accattcggt ccatgaaaag 360
atctttcaaa atttccagga gactgtcttg atctaacctg gttcaaggtt accatggggt 420
ttaaantgtt caacgtggag gnngnggagg acttttnaaa cccttggttn aaccttnaat 480
tttnaggagt ttttcaaaa 499

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<212> DNA
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ggtagacgaa gaggaagaca aacctacagt cgcttccaaa ctctagagtt ggaaaaggaa 120
tttcttttta acccctatct gaccaggaaa agaagaatcg aggtttccca cgccctagcc 180
ctcaccgaga gacaggtaaa aatctggttc cagaacagga gaatgaaatg gaaaaaggaa 240
aacaacaagg acaaatttcc cgtttcccgg caggaggtga aggacgggga aacgaaaaag 300
gaagcccaag agctggagga agacagagcc gaaggcctga caaattaact tctaccttta 360
aaatttacca cagactatta aaactaataa tcaccatatg ctgtggacac cacctatttt 420
ctttggtgga aaggacctta cctgngtttc aagctacctt catgtcactg gtcttgaggg 480
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<210> 397
<211> 443
<212> DNA
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<220>
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<222> (443)
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<400> 397
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gcttttcccg ttggggccga agtaccttcc ctgnggcggc gactcagcgg ggtgtcgttc 120
ggccggcgtg acgcagccgg atcggcgcca gacggaaacc tagcggtgac tgtatctgaa 180
ttttgcagct gcagaatgtg tagtacctta aaaggttggc aacaatgagt aaaccagaat 240
taaaggaaga caagatgctg gaggttcact ttgtgggaga tgatgatgtt cttaatcaca 300
ttctagatag agaaggagga gctaaattga agaaggagcg agcgcacttt tggtcaaccc 360
caaaaaaata ataaagaagc cagaatatga tttggaggaa gatgaccagg aggtcttaaa 420
agatcagaac tatgtggaaa ttn 443

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<212> DNA
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<222> (639)
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tttaccaaag cggntgaaaa ttgtggaagt tggtccccga gatggactac aaaatgaaaa 180
gaatatcgta tctactccag tgaaaatcaa gctgatagac atgctttctg aagcaggact 240
ctctgttata gaaaccacca nctttgagtc tcctaagtgg gttccccaga tgggtgacca 300
cactgaagtc ttgaagggca ttcanaagtt tcctggcatc aactacccag tcctgacccc 360

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aaatttgaaa ggcttcgagg cancggnacc atgactnctg tgaggatgca gcactccctg 420
gcaggtcaga cctatgccgt gcccttcatc cagccagacc tgcggcgaga ggaggccgtc 480
cagcagatgg cggatgccct gcagtacctg cagaaggctc tggagacatc ttcagcaagt 540
gggtgctgnc actcaccccc acctgatgag agggccatnc ctgtctgggc aatnccagca 600
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<210> 399
<211> 341
<212> DNA
<213> Homo sapiens

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<220>
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<222> (84)
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<220>
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<221> misc feature
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<220>
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<222> (332)
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<400> 399

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aaccaaggct tccctttacc tctncactca caatgggaac atgtacacct catccctgta 120
cgggtgcctg gcctcgnttc tgtcccacca ctntgcccaa gaactggctg gctccaggat 180
tggtgccttc tcttatggct ctggtttagc agcaagtttc ttttcatttc gagtatcccg 240
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tctaaaggtg ttctgcagat ccatggaaag cttctgggaa acgtatgcta gcagagcttc 300
tncccgtgan tcatattttt aagatcccac tnttagctgg a 341

<210> 400
<211> 604
<212> DNA
<213> Homo sapiens

<220>
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<222> (392)
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<220>
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<222> (484)
<223> n equals a,t,g, or c

<220>
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<222> (559)
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<220>
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<222> (593)
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aggaaaggtt aaaaaaagta aaaggaactc ggcaaatctt accccgcctg tttaccaaaa 180
acatcacctc tagcatcacc agtattagag gcaccgcctg cccagtgaca catgtttaac 240
ggccgcggta ccctaaccgt gcaaaggtag cataatcact tgttccttaa atagggacct 300
gtatgaatgg cttcacgagg gttcagctgt ctcttacttt taaccagtga aattgacctg 360
cccgtgaaga ggcggcatga cacagcaaga cnaagaagac cctatggagc tttaatttat 420
taatgcaaac agtacctaca aacccacagg tcctaactac caaacctgca ttaaaaaatt 480
cggntggggc gacctcggac anaaccaanc tccagcagta catgctaaac ttaccagcaa 540
acgactatat ctaattganc atacttgaca aggacaagta cctaggaaca ggnaatcttt 600
ttaa 604

<210> 401
<211> 519
<212> DNA
<213> Homo sapiens

<400> 401
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acgagaagac cctatggagc tttaatttat taatgcaaac agtacctaac aaacccacag 180
gtcctaaact accaaacctg gcattaaaaa tttcggttgg ggcgacctcg gagcagaacc 240
caacctccga gcagtacatg ctaagacttc accagtcaaa gcgaactact atactcaatt 300
gatccaataa cttgaccaac ggaacaagtt accctaggga taacagcgca atcctattct 360
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cctctcctac ttggataact gtggtaattc tagagctaat acatgccgac gggcgctgac 180
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ttctcgggag gagcttnnag aactacaaga ggcatttaat aaaatagata tnnacaatag 180
tgggtatgtc agtgactatn aacttcaaga cctgtttaag gaagcaagcc ttcctctgcc 240
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tttgacgacg aaaacacagc ccagtttgtt catgtcagtg agagcttccc acaccctggc 240
ttcaacatga gcctcctgga gaaccacacc cgccaagcag acgaggacta cagccacgac 300
ctcatgctgc tccgcctgac agagcctgct gataccatca cagacgctgt gaaggtcggg 360
aagttgccca cccaggaacc cgaagtgggg gagcacctgg ttggcttccg gctggggcaa 420
gcattgaacc agaagaattt cttaatttca gaagatcttc aaatggtgng gancettcaa 480
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cggggcgcgc ctgcctgccc tgctggacga gcagcaggta aacgtgctgc tctacgacat 180
gaacggctgt tactcacgcc tcaaggagct ggtgcccacc ctgccccaga accgcaagtg 240
aagcaaggtg gagattttcc agcacgtcat cgactacatc agggacttta atttgnantt 300
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ncancttccc catgctgcca ncccngattn tggctgaaac gaccggccct ngaggacctg 180
gtcttaggtt cagaagcgaa gcatcacgtg acacantgac cggcctgaga gaatgcctct 240
ggtgaccact ntnacctggg acgccnttaa agtgggaaga gcnctgtttc aaggaccacc 300
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ccccaaaacc caaggacact ctcatgaatc tcccggaccc ctgaaggtca cgtgcgtggt 180
ggtggacgtg aagccaggga agaccccgag gtccagttca actggtacgt ggatggcgtg 240
gaggtgcata atgccaagac aaagccgcgg gnggagcagt tcaacagcac gtaccngtgg 300
ttcagcgtcc ttcaccgtcc tgcaccagga tggcttgaac ggcaagggag ttacaagtgg 360
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ctggcgccct gctccangaa cacctccgaa aacacagcgg ccctgggctg cctggtcaag 180
gactacttcc ccgaaaccgg tgacggtgtc ttggaactca gggggctctg accagcgggg 240
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gcctgtatct ccaagtgaac agtctgagag ttgaggacac cgncttgtat tactgtgcaa 420
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tacgccgcgt ctgtgaaaag gcagattcac catctcaaag agatgattcc acaggcatcg 360
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gactacaggc acacccctgg ctactggggg cagggaaccc tggtcaccgn cttctctggc 480
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ctganactct cctgtgcagc ctctggattc accttcagta gttangacat gcattgggtc 120
cgccaagttg caggaaaang tctggaatgg gtctcangta ttgatcctgc tggtaacaca 180
aactatccan gctccgtgaa nggccgattc atcatctcca gagaaaatga caagagctcc 240
tcgtatcttc aaaatgaatg ggctgacanc cggggaaaac ngtgtgtaat attgtnnaaa 300
nanaaattgc anttcctggt aantgggtan ntncgatctc ttggggccgn nggaancctt 360
ggttaaatgt nttcctcaag aattnccccga accaagnccc caaaggtttt tcccgcttaa 420
anccttttgaa aaagaaac 438

<210> 416
<211> 502
<212> DNA
<213> Homo sapiens

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accattacca gggacacatc cacgaacaca gcctacatgg atctnagcag cctgagatct 120
gaagacacgg ctgtntatta ttgtncgagg ggatttttg gggaccgtga ttactactac 180
tactactaca tggacgtctg gggcaaaggg accacggtca ccgtctcctc agcatccccg 240
accagcccca aggtcttccc gctgagcctc tgcagcaccc agccagatgg gaacgtggtc 300
atcgcctgct tngtccaggg cttcttcccc caggagccac ttcagtgtgg acctggagcg 360
aaagggnaca gggcgtgacc gccagaaaat tcccacccag ccaggatgcc tccgggggac 420
ctgtacanca cgagcagcca gctgaccctg ncggncacaa gtgccttagc cggnaagttn 480
cgttgacatt gccacgtgga ag 502

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<212> DNA
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<223> n equals a,t,g, or c

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<222> (388)
<223> n equals a,t,g, or c

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<222> (411)
<223> n equals a,t,g, or c

<220>
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<222> (427)
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gatccacggt ggcatccagc ttacaaagtg gagtccccgg aaggttcagt ggcaggggga 120
tctgggacag atttcactct caccattagc agtctgcaac ctgaagattt tggcacttac 180
ttctgtcaac agaattacaa tgtcccgtgg aacgttcggc caggggaacn aangtggaaa 240
atgaaaccga actgtggctg caccatctgt cttcatcttc ccgccatctg atgagcagtt 300
gaaatctgga actgcctctg ttgtnttgcc tgctgaataa cttctatccc anaaaaggcc 360
aanttcattg gaaggtggat aacccccncc atcggttact cccggaaaat ntcccaaacc 420
ggacgcn 427

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<213> Homo sapiens

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<222> (262)
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<222> (282)
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ctgactatta ctgtcaggcg tgggacagta gcgctgtggt cttcggcgga gggaccaggc 120
tgaccntcct angtcagccc aaggctgccc cctcggtcac tctgttcccg ccctcctctg 180
angagcttca agccaacaag gccacactgg tgtgtctcat aaatgacttc tacccgggaa 240
gccgtgacag tggnctggaa angcagatan caaccccgtt cnaggcggaa ttgggangaaa 300
caaccaca 308

<210> 419
<211> 482
<212> DNA
<213> Homo sapiens

<220>

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<222> (441)
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<222> (449)
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ggcctggtct cctctcctcc tcactctcct cgctcactgc acagggtcct gggcccagtc 120
tgtgctgacg cagccgccct cagtgtctgg ggccccaggg cagagggtca ccatctcctg 180
cactgggagc agctccaaca tcggggcagg ttatgatgta cactggtacc agcagcttcc 240
aggaacagcc cccaaagtcc tcatctatgg taacagcaat cggccctcag ggtccctga 300
ccgattctct ggctccaagt ctggcacctc agcctccctg gccatcactg ggctccaggc 360
tgaagatgan gttgattatt actgccagtc ctatgacagc agcctgggtg gttcggtgtt 420
cggcggaagg accaagctga ncgtcctang tcagcccaaa gntgcccccct cggtaactct 480
gt 482

<210> 420
<211> 462
<212> DNA
<213> Homo sapiens

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<222> (71)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (85)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (86)
<223> n equals a,t,g, or c

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<222> (100)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (110)
<223> n equals a,t,g, or c

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<222> (438)
<223> n equals a,t,g, or c

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<222> (446)
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<220>
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<222> (452)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (456)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (459)
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tcactgtgca nggtcctggg cccannctgt gctgactcan ccaccctcan cgtctgggac 120
ccccgggcag agggtcacca tctcttgttc tggaagcagc tccaacatcg gaactaatta 180
tgtatactgg taccagcagc tcccaggaac ggcccccgaa gtcctcatct ataagaatga 240
tcagcggccc tcaggggtcc ctgaccgatt ctctggctcc aagtctggca cctcagcctc 300
cctggccatc ggtgggctcc ggtccgagga tgaggctgat tattactgtg catcatggga 360
tgacagcctg agtggtccgg tcttcggcgg agggaccaag ctgaccgtct tgggtcagcc 420
caaggctgcc ccctcggnca ctctgntccc gncctnctnt ga 462

<210> 421
<211> 435

<212> DNA
<213> Homo sapiens

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<222> (324)
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<221> misc feature
<222> (351)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (391)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (416)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (423)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (431)
<223> n equals a,t,g, or c

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ctttctgcac agcggaagag aggccaggcc cctgtggtgg tcatctatga ggacaacaaa 120
cgaccctccg ggatccctga gagattctct ggctccacct cagggacatt ggccaccgtg 180
attatcagtg gggcccaggt ggacgatgat actgacttct actgtcagtc aacacacagt 240
agtaataatg gtaggtccgt atgtcttcgg aactgggacc aaggtcaccg tccttggtca 300
gcccaaggcc aaccccaatg tcantctgtt cccggcctcc tctgaaggag nttcaagcca 360
aacaaaggca cactaagtgt gtctgatcag ngagttttaa ccgggaagtg tgaaantggg 420
ctnggaagca nattg 435

<210> 422
<211> 334
<212> DNA
<213> Homo sapiens

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<222> (122)
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<222> (135)
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<222> (145)
<223> n equals a,t,g, or c

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<222> (310)
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<220>
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<222> (324)
<223> n equals a,t,g, or c

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<222> (326)
<223> n equals a,t,g, or c

<220>
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<222> (331)
<223> n equals a,t,g, or c

<400> 422
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ctgcacagac tctgaggcct cccatgaatt gagacaacca ntttcggtgt cagtgtcccc 120
angacagacg gccangatca cctgntctgg agatgcattg ccagaacaat ctatttttg 180

gtatcaacag aagccaggcc aggcccctgt attggtgatt tataaagtcc atgagaggcc 240
gtcagatgcc ctgaacgatt ctctggctcc aggtcacaga caacagtcac gttgaccatc 300
agtggagccn agggcaaaaa atnngngggg ngtg 334

<210> 423
<211> 597
<212> DNA
<213> Homo sapiens

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<222> (126)
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<222> (132)
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<220>
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<220>
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<220>
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<220>
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nggtggcggc cgctctagaa ntactggatc ccccgggttg cccgggttcg gcganannng 120
acaatntagg cnatgtaggg tctggtcccc caaatccaga tctgtcgnaa acantnttgg 180
atcaatacnt tgccatggnc ncanaaaanc atgggtncaa catggaacan gctcttggga 240
tgctcttctg gcataancnt aatatccaaa antcatnggc tgatttgccc aacttnaccc 300
ctttcccaga taagtggact gtggaagata aantcttatt tgancaagcc tttacttttc 360
atgggaaaac ttttcataca atccaaccaa tgnttccaca taaatctata gnnngtctgg 420
tgaaatntta ctattcttgg aaaaaagacg aagactnaaa ctattgtgat ggatcgccat 480
gccccggaaa cnaaacggga cgggaagaga ncnacgatga actggaacaa gcaaatggaa 540
caatccccatn gnacttgaag ttggatccaa accaagaaan ccaaagggaa gtcccct 597

<210> 424
<211> 143
<212> DNA
<213> Homo sapiens

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<222> (92)
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<400> 424
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gaggcccggt actacagcct cagcctgacg gnacancanc tctcccacat cgtggcggag 120
ttgaggaacc ngaaacanaa aat 143

<210> 425
<211> 323
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (291)
<223> n equals a,t,g, or c

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ggaaaacttt gaagccttca tgaaggcaat cggtctgccg gaagagctca tccagaaggg 120
gaaggatatc aaggggtgt cggaaatcgt gcagaatggg aagcacttca agttcaccat 180
caccgctggg tccaaagtga tccaaaacga attcacggtg ggggaggaat gtgagctgga 240
gacaatgaca ggggagaaag tcaagacagt ggttcagttg gaaggtgaca ntaaactggt 300
gacaactttc aaaaacatca agt 323

<210> 426
<211> 683
<212> DNA
<213> Homo sapiens

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<222> (94)
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<220>
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<222> (301)
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<220>
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<222> (662)
<223> n equals a,t,g, or c

<400> 426

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tgcnacgtna tagntnttnt atagggtcac ctaaattnaa ttnactggcc gtcgttttac 180
aacgtcgnga ctggnaaaac cctggngtta cccaacttaa tcgccttgca gnanatcccc 240
ntttcgccag ntggcgtaat ancnaaaagg cccgnaccga tcgccnttcc naacagttgc 300
ncagcctgaa tggcaaatgg gacncncccct gtagcggngc attaagcncg gcgggtgtgg 360
gggttacccn cagcgtgacc gttacanttg ccagngccnt agcgcccgnt cctttcgntt 420
tcttcccttc ctttttcgcc acgttcgccg gttttccccg taaagcttta aatgggggc 480
tcccttnagg gttccgattt agggctttac gggaccttga ccccaaaaaa ctttgnttag 540
ggggatggtt cacgtagngg ggccattgcc cttgatanac gggtttttcg cccttttgac 600
nttggantcc cacgtttttt aaatagggg gcntttttgt tccaaaantg gggaacaaac 660
antttaaccc cttttttttgg ggg 683

<210> 427
<211> 369
<212> DNA
<213> Homo sapiens

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<222> (337)
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<400> 427
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cgatggctcc actcccatca acctcttcaa cacagccttt gggctgctgg ggatggggcc 120
cgagggtcca gcccctgggc agaaaggttg gcattgggcc cagccctgga agggggatat 180
ccccccagtc ttgctcaagc cctcaagct cctggaaaac accactttgt gcctgttctg 240
cgcttactcc tgattaatac aatgaatttt cttgggcatt ttacaatttc caacacttta 300
aaaaaaaaaa aaaaaaattc aangggggg ccggttncca attnccccnn ttttatttct 360
tttaaaatc 369

<210> 428
<211> 299
<212> DNA
<213> Homo sapiens

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<220>
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<400> 428
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gcgtcggcgg tagctgctnt tcctggggcc cgtgggcctc atcatgtacc tcgggggcgt 120
nttcttcatc aaccggcagc gctctagcac tgccatgaca gtgatggccg acctgggcga 180
gcgcatggtc agggagaacc tcaaagtgtg gatctatccc gagggtactc gcaacgacaa 240
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<210> 429
<211> 538
<212> DNA
<213> Homo sapiens

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<222> (133)
<223> n equals a,t,g, or c

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<222> (325)

<223> n equals a,t,g, or c

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<220>
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<400> 429
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aggctcagtg caggatccag gcctgcatgt gtggcgggtg gagaagctga agccggtgcc 120
tgtngcgcaa ganaaccagg gcatcttctt ctcgggggac tcctacctag tgctgcacaa 180
tggcccagaa gaggtttccc atctgcacct caacacactg ctgggagagc ggcctgtgca 240
gcaccgcgag gtaaggggca atgagtctga cctcttcatg agctacttcc cacggggctt 300
caagtaccag gaaggtggtt tggantcagc atttcacaag acttccacag gagccccagt 360
tgccatcaag aaantntacc aggtgaaggg gaanaanaaa tccgtccaac gagngggcat 420
gaattgggaa anttnaaatn ggggttgttt acctggaatn ggcaaaaatt tnnctggttt 480
gngnaatcaa atttgganna aaagggggga ttgcctggat cgggatttnc aaggaagc 538

<210> 430
<211> 552
<212> DNA
<213> Homo sapiens

<220>
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<222> (434)
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<220>
<221> misc feature
<222> (449)
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<220>
<221> misc feature
<222> (505)
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<222> (508)
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<220>
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<220>
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<400> 430
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atggccgttc ttagttggtg gagcgatttg tctggttaat tccgataacg aacgagactc 120
tggcatgcta actagttacg cgaccccga gcggtcggcg tcccccaact tcttagaggg 180
acaagtggcg ttcagccacc cgagattgag caataacagg tctgtgatgc ccttagatgt 240
ccggggctgc acgcgcgcta cactgactgg ctcagcgtgt gcctacccta cgccggcagg 300
cgcgggtaac ccgttgaacc ccattcgtga tggggatcgg ggattgcaat tattccccat 360
gaacgaggaa ttcccagtaa gtgcgggtca taagcttgcg ttgattaagt ccctgcccct 420
tcaacccttc tggnccttcg gaccactgng acttttccat ctttcttaaa cggaggctgg 480
gccttggggg gggggctggc ctggnttntg ttgnccccaa ganggtgctt tcaanggtga 540
ggaacttttt tt 552

<210> 431
<211> 218
<212> DNA
<213> Homo sapiens

<220>
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<222> (31)

<223> n equals a,t,g, or c

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<222> (36)
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<220>
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<222> (105)
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<220>
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<220>
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<222> (168)
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<220>
<221> misc feature
<222> (171)
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<220>
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<222> (181)
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<220>
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<222> (196)
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<400> 431
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ccagttcggg ttgaatgcaa gtnctagccg atttttccta caannantcc agttgattac 120
aattcttcct gtacgncaga gancccctgcc tttaaaagnt gccaacgntt ncctgacgag 180
ncctgcagcc acagtncggc aattcctaca agtgccaa 218

<210> 432
<211> 610
<212> DNA
<213> Homo sapiens

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<222> (401)
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<222> (587)
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<222> (590)
<223> n equals a,t,g, or c

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<222> (592)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<400> 432
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taggaggtgg aattcagagc atcacctaca cccacaacgg agacatcagc cgaaagccca 120
acacacgtaa gcagaagaac ggcttcccgc ccaacttcat ccactcgctg gactcctccc 180
acatgatgct caccgccctg cactgctaca ggaagggcct gaccttcgtc tctgtgcacg 240
actgttactg gactcacgca gctgatgtct ccgtcatgaa ccaggtgtgc cgggagcagt 300
ttgtccgctt gcacagcgag cccatcctgc aggacctgtc cagattcctg gtcaagcggt 360
tctgctctga gccccagaag atcttggagg ccagccagct naaggagaca ctgcaggcgg 420
tgcccaagcc aggggccttc gacctggagc aggtgaagcg ttccacctac ttcttcagct 480
gacaccccgt gagccttgtc agtgtgtaaa taaagctctt ttgccacccc aaaaaaaaaa 540
aaaaaaaact tggggggggg gcccgggacc caattgccct atagggnggn gnnttacaat 600
tcantggccg 610

<210> 433
<211> 328
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (123)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (131)
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<220>
<221> misc feature
<222> (132)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (141)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (222)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (223)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (225)
<223> n equals a,t,g, or c

<220>
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<222> (244)
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<220>
<221> misc feature
<222> (249)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (266)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (291)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (314)

<223> n equals a,t,g, or c

<400> 433
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aagaactact ttgatgggga aggaaaagtg cggatgatcg tgtatgtgaa ccccaaggct 120
gangattatg nngaaaactt ncaagtcatg agatttgcgg aagtgactca agaagttgaa 180
gtagcaagac ctgtagacaa ggtaatatgt ggtttaacgc cnngnaggag atacagaaac 240
cagnctcgng gtccagttgg aaatgnacca ttgggtactg acgtggtttt ncagagtttt 300
ccacctttgc cgtncatgcg aaattttt 328

<210> 434
<211> 535
<212> DNA
<213> Homo sapiens

<220>
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<222> (77)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (274)
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<220>
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<222> (351)
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<220>
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<222> (405)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (454)
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<220>
<221> misc feature
<222> (491)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (504)
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<221> misc feature
<222> (512)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (517)
<223> n equals a,t,g, or c

<400> 434
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catggaaaat gaaatnngaa actctctgaa caagaattac aatttcgtcg tctcagtcaa 120
gagcaagttg acaactttac tctggatata aatactgcct atgccagact cagaggaatc 180
gaacaggctg ttcagagcca tgcagttgct gaagaggaag ccagaaaagc ccaccaactc 240
tggctttcag tggaggcatt aaagtacagc atgnaagacc tccatctggc agaaacacct 300
actatcccgc tgggtagtgg cagttgaagc ccatccaaag ccaactgttc nggataatga 360
atttcaccca agctttaacc gcagctattc ccttccagag ttccnggacc cgtggggtgg 420
ttacatggaa gagaaccctt agggcccgtt ttcncatggt ggtttccaaa aattgggccc 480
cgagggtagg nccaatggat tggnttggaa ancccgnaat tagcttgtta cccgt 535

<210> 435
<211> 524
<212> DNA
<213> Homo sapiens

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<222> (138)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (154)
<223> n equals a,t,g, or c

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<221> misc feature
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<222> (258)
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<220>
<221> misc feature
<222> (262)
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<220>
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<222> (269)
<223> n equals a,t,g, or c

<220>
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<222> (279)
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<220>
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<222> (354)
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<220>
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<223> n equals a,t,g, or c

<220>
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<222> (380)
<223> n equals a,t,g, or c

<220>
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<222> (498)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (500)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (518)
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<400> 435
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ctcatgaatc attgctccgg gtcctgcggg acatttgtca tgtactcggn ccaagcccag 120
gccctggacc acagcttnct cctgctgcaa aganganaaa accagccagc gtgaggttgg 180
tcctgagctt gccccaatgg cggctcgctt gacacacacc tacacccaca tcgaaganct 240
gccagtgcca agaacacnnt cntgggggnt tccccaacng gaacttcccg ccggggccgg 300
ggggcttncc ccttagcatc tggaacgtag gtttttnnnn nnnnngnnan aaancccccct 360
ttcaattgcc cttcnaaaan ttttacctcc ccccgaacct ctttaaactc cttaaactcg 420
ggttcctctt cttccaaata ttatgttcta attttttttt tcatccctgc tttcccaata 480
taaactcagg gggaaatncn aaaaaaaaaa aaatccangg gggg 524

<210> 436
<211> 384
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (79)
<223> n equals a,t,g, or c

<220>
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<222> (124)

<223> n equals a,t,g, or c

<220>
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<222> (177)
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<222> (191)
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<220>
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<222> (320)
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<222> (341)
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<220>
<221> misc feature
<222> (349)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (374)
<223> n equals a,t,g, or c

<400> 436
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ttacttcatg cagttcagna ccagctcggg gtccgcggaa gaggcagccc tactggagtc 120
tcgnattctt tacccaaaga ggaagcagca gtgcctgcaa tttttctata aaatgancgg 180
ggaagtcctt ncagacagac ttcgttgtct gggtncagga ggggatgaca gcacaggcaa 240
tgttcgcaat tggtgaaggt gcagactttt caaggagatg atgaccacaa tttggaaaat 300
tggcccatgt gggtgcttcn aagaggaaca gaatttcggt naccttttnc caggggcaca 360
aaaggnggac cttnagagct tcaa 384

<210> 437
<211> 390
<212> DNA
<213> Homo sapiens

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<222> (304)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (317)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (372)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (385)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (386)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<400> 437
cttgctcaat gacgccgtca ctgtggtcct gtatcacctc tttgaggagt ttgccaacta 60
cgaacacgtg ggcatcgtgg acatcttcct cggcttcctg agcttcttcg tggtggccct 120
gggcggggtg cttgtgggcg tggtctacgg ggtcatcgca gccttcacct cccgatttac 180
ctcccacatc cgggtcatcg agccgctctt cgtcttcctc tacagctaca tggcctactt 240
gtcagccgag ctcttccacc tgtcaggcat catggcgctc atagcctcag gagtggtgat 300
gcgnccctat gtgggangcc aacacttcca caagttccca caacaacatc aaataatttc 360
ctggaagatg tnggagcagc gtcannaagn 390

<210> 438
<211> 234
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)
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<220>
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<222> (21)
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<220>
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<220>
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<222> (47)
<223> n equals a,t,g, or c

<220>
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<222> (82)
<223> n equals a,t,g, or c

<220>
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<222> (114)
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<400> 438
nccccggact tttagtgtaa ngcncctacc ccctgcaggt accggtncgg aattcccggg 60
tttgactcca cgcgttttgc tncattaaca acataaaacc ctcatggaca cganaaaaca 120
ccctcatgtt catacaccta tcccccattc tcctcctatc cctcaacccc gacatcatta 180
ccgggtttc ctcttaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 234

<210> 439
<211> 144
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<220>
<221> misc feature

<222> (36)
<223> n equals a,t,g, or c

<220>
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<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (105)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (114)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (135)
<223> n equals a,t,g, or c

<400> 439
nnctatcgat ggggagcaag agtcttttaa ataagnccat ttnagtccct ggttaacaag 60
ggtttaaagt ggagcgaatg cacatcacag acatgaaatt ggctnacctg cctngcttag 120
aagcccttgg tgttnaggtc aaca 144

<210> 440
<211> 411
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (69)
<223> n equals a,t,g, or c

<220>
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<222> (86)
<223> n equals a,t,g, or c

<220>
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<222> (132)
<223> n equals a,t,g, or c

<220>
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<222> (209)

<223> n equals a,t,g, or c

<220>
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<222> (230)
<223> n equals a,t,g, or c

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<222> (246)
<223> n equals a,t,g, or c

<220>
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<222> (276)
<223> n equals a,t,g, or c

<220>
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<222> (340)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (346)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (404)
<223> n equals a,t,g, or c

<220>
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<222> (410)
<223> n equals a,t,g, or c

<400> 440
gccaaggtcc accccaactc tgtgcacatc tgtgcggtgg ttgtggagta cgagaccaag 60
gctggccgna tcaacaaggg cgtggncacc aactggctgc gggccaagga gcctgccggg 120
gagaacggcg gncgcgcgct ggtgcccatg ttcgtgcgca agtcccagtt ccgcctgccc 180
ttcaaggcca ccacgcctgt catcatggng ggccccggca ccggggtgtn acccttcata 240
ggcttnatcc aggagcgggc ctggctgcga cagcanggca aggaggtggg ggagacgctg 300
ctgaactacg gctgccgccg ctcggatgag gactacctgn accggnagga gctggcgcag 360
ttccacaggg acggtgcgct cacccagctn aacgtggcct tctnccgggn a 411

<210> 441
<211> 623
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (73)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (141)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (162)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (232)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (252)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (289)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (360)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (365)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (407)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (435)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (472)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (495)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (502)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (504)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (509)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (538)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (560)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (586)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (587)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (619)
<223> n equals a,t,g, or c

<400> 441
gccagcagnc accacagcgc ctgcttcctc ggccctgaaa tcatgcccct aggtctcctg 60
tggctgggcc tanccctgtt gggggctctg catgcccagg cccaggactc cacctcagac 120
ctgatcccag ccccacctct nagcaaggtc cctctgcagc anaacttcca cgacaaccaa 180
ttccacggga agtggtatgt ggtacgcctg gcacggaatg caattctcag anaacacaaa 240
gacccgcaaa anatgtatgc caccatctat gagctgaagg aaacaaganc tacaatgtcc 300
ctccgcctgt ttaagaaaaa aaaatgtgac tacttggatc aggaattttg gtccaaggtn 360
gccanccggc gaattccacc ttggggacct ttaaaattgc cttggantaa ccaatttcct 420
ccttccaatt gttancacca attacaacng ccttcttttg gttttcttcc anaaaatttc 480
tccaaacaag gaatncttcc ananccccnc ttccggaaaa acaaggaatt aattccgnac 540
ttaaaggaaa aattctccgn tctcccattt cttgggcccc ctaaanncaa attcgtcttc 600
ccttttccaa ccaacattnt ttt 623

<210> 442
<211> 211
<212> DNA
<213> Homo sapiens

<220>
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<222> (47)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (77)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (93)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (121)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (131)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (178)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (195)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (207)
<223> n equals a,t,g, or c

<400> 442
tgggcagcca cactgcacgc aggctgggcc gactgagggg ctcagangcc aggctctnag 60
gcccacgcag ggcctanggt gggaagatgg cangtggggg cggcgacctg agcaccagga 120
ngctgaatga ntgtatttca ccagtagcaa atgagatgaa ccatcttcct gcacacancc 180
acgatttgca aaggntgttc acggaanacc a 211

<210> 443
<211> 399
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (316)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (347)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (358)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (376)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (391)
<223> n equals a,t,g, or c

<400> 443
gtctgagtgg atggacactg cctcttagaa ctagaactta gaactttatc ttgaaaatgt 60
accactgttg cagaagctcc tcacagagta tgtgtcaggc atttttaacc tgctaaaggc 120
aagaagaagt gttcaccaca tagttgcaaa ggtcttcaac ttgccacagc caacagaaaa 180
atcaaaatga ttgaaccctt tgggaatcaa gtatattgtg gccaggccag tgtattctac 240
aaatgctttt gaggaaaatc ataaaaagac aggaagacat cataagacat ttctggatca 300
tctcaaagtg tgttgnaact gttccccaca aaaggcaaga gaattgncct ctctttgntt 360
cccatagcat tttggntgcc agcataccgg nttaaagaa 399

<210> 444
<211> 465
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (376)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<400> 444
gcgggactcc aaatgggtcg cagtcgcagc cgctctccac ggagggaacg taggcgttcc 60
cggtccacat cccgggagag agaacgcagg cgccgagaaa ggtccaggtc tcgggagaga 120
gatcggagaa ggagccgctc gcgatccccg caccgaagac gctcccgatc tccaagacga 180
catagatcca catctccttc cccttctcga ctgaaagaaa gaagagatga ggaaaagaaa 240
gaaacaaaag aaacaaagag caaagaacgg cagattactg aggaagactt agagggcaaa 300
acagaggaag aaatagaaat gatgaagtta atgggatttg cctcctttga ctccacaaaa 360
ggtaagaagg tggatngctc tgtaaatgcn tatgccataa atgtctctca gaagaggaag 420
tacaggtatg catagccccc atttttgttt gaactaataa atcag 465

<210> 445
<211> 297
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (7)
<223> n equals a,t,g, or c

<400> 445
ggcagtntct ctgccaggct ggggatgatt ccaatagtaa taagaagaat gctgacctcc 60
aagtgctaaa gcccgagccc gagctggttt atgaagacct gaggggctca gtgaccttcc 120
actgtgccct gggccctgag gtggcaaacg tggccaaaat tctgtctggc agagagtggg 180
gaaaagacgc ggtttccagc ttgcagattt gttaagtttc tcaggcagat tttgactttc 240
agcctttcat acttgtttaa gcaactattt gtattaaatg aagtttttg aaaaaca 297

<210> 446
<211> 448
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (22)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (306)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (369)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (435)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (440)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (448)
<223> n equals a,t,g, or c

<400> 446
tcgacccacg cgtccgccga nnanagtttg gttttgcgga ttgccaccga tgattccaaa 60
gcagtctgtc gcctcagtgt taaattcggg gccacactca aaatcagcag gcttctcttg 120
gaacgggcga gagagctgaa tattgacatc atcggtgtca gcttccacgt gggaagtggc 180
tgcaccgatc ctggagacct tcgtgcaagc catctccgat gcccgctgtg tcttcgacat 240
ggggagctga ggttggtttc aacatgtatc tgcttgatat cggtggtggg ctttcctggg 300
atctgnagga tgtgaaactt aaatttggaa gagatcacca tgttatcaac ccagccctgg 360
gacaantant tcccgggccg aattcgggcg tggacattca tagccgagcc cgggcaggat 420
aattaagttg gcttncagcn ttcaagcn 448

<210> 447
<211> 268
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (45)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (60)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (99)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (132)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (135)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (140)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (141)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (159)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (183)
<223> n equals a,t,g, or c

<220>
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<222> (192)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (206)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (222)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (243)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (260)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (262)
<223> n equals a,t,g, or c

<400> 447
ggcacgaggn agtgtcccag ncgggttcgt gtcgcnatgg ggnanatcga gtgggccatn 60
tgggccaacg agcaggcgct ggcgtccggc ctaatcctna tcaccggggg catcgtggcc 120
acagctgggc gnttnacccn ntggtacttt ggtgcctant ccattgtggc gggcgtgttt 180
gtntgcctgc tngagtaccc ccgggnaaag aggaagaagg gntccaccat ggtgcgatgg 240
ggncagaagt acatgaccgn cntggtga 268

<210> 448
<211> 425
<212> DNA
<213> Homo sapiens

<400> 448
gacaccttca tccgtcacat cgccctgctg ggctttgaga agcgcttcgt acccagccag 60
cactatgtac atgttcctgg tgaaatggca ggacctgtcg gagaaggtgg tctaccggcg 120
cttcaccgag atctacgagt tccatctccc aagtggtttg acgggcagcg ggccgccgag 180
aaccaccagg gcacacttac cgagtactgc ggcacgctca tgagcctgcc caccaagatc 240
tcccgctgtc cccacctcct cgacttcttc aaggtgcgcc ctgatgacct caagctcccc 300
acggacaacc agacaaaaaa gccagagaca tacttgatgc ccaaagatgg caagagtacc 360
gcgacagaca tcaccggccc catcatcctg cagacgtacc gcgccattgc caactacgag 420
aagac 425

<210> 449
<211> 88
<212> DNA
<213> Homo sapiens

<220>
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<222> (25)
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<220>
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<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (71)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (73)
<223> n equals a,t,g, or c

<400> 449
tcgttgccct gttactgtct gtggnnatgt gcatggtcaa tttcatgatc ttatggaact 60
ctttagaatt ngnggaaaat caccggat 88

<210> 450
<211> 214
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (31)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (53)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (68)
<223> n equals a,t,g, or c

<220>
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<222> (71)
<223> n equals a,t,g, or c

<220>
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<222> (75)
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<220>
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<222> (89)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (91)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (102)
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<220>
<221> misc feature
<222> (108)
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<220>
<221> misc feature
<222> (113)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (114)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (141)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (154)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (193)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (204)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (205)
<223> n equals a,t,g, or c

<400> 450
atctccantg gaaccacgtt gtggcngatg ntggggcttt cctgcggtnc aangagccct 60
taccgganta ngtgnggatg gtgactgant nttcaaataa antacganac tgnnccaacc 120
tctctgccac ggacatccaa ntgcttgcac gcanatacca gttggaagca gagtttgttg 180
gggtgtctca acnaaaagtt gagnnaagca acgt 214

<210> 451
<211> 473
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (370)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (444)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<400> 451
gcggacgcgt ggggcaagac ttttgcccgg tacctttcat tccggcgtga caacaatgag 60
ctgttgctct tcatactgaa gcagttagtg gcagagcagg tgacatatca gcgcaaccgc 120
tttggggccc agcaggacac tattgaggtc cctgagaagg acttggtgga taaggctcgt 180
cagatcaaca tccacaacct ctctgcattt tatgacagtg agctcttcag gatgaacaag 240
ttcagccacg acctgaaaag gaaaatgatc ctgcagcagt tctgaggccc tatgccatcc 300
ataaggattc cttgggattc tggtttgggg tggtcagtgc cctctgtgct ttatggacac 360
aaaaccagan cacttgatga actcggggta ctagggtcag ggcttatagc aggatgtctg 420
gctgcacctg gcatgactgt ttgnttctcc aacctgcttt gtgcttctna cct 473

<210> 452
<211> 397
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (225)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (330)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (376)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (385)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (387)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (389)
<223> n equals a,t,g, or c

<400> 452
gggtcgaccc acgcgtccgc ccacgctcnc gcttgcttgg acatcaggta ccaactgcac 60
tcgttttggc attgcagcta aatatcagtt ggatcccact gcttccattt ctgcaaaagt 120
caacaactct agcttaattg gagtaggcta tactcagact ctgaggcctg gtgtgaagct 180
tacactctct ggctctggta gatgggaaga gcattaaatg ctggnaggcc acaaggttgg 240
ggctcgccct gggagttggg aggcttaatc cagctgaaag aaacctttgg ggaatgggat 300
atccagaaga tttgggcctt aatataattn ccattgtgga ccagcagcag gctttttttc 360
cccccaagaa gattgntcca aaccnangnt gatctcc 397

<210> 453
<211> 463

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (315)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (393)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (404)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (426)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (435)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (453)
<223> n equals a,t,g, or c

<400> 453
ggcaagatgg tgttgcagac ccaggtcttc atttctctgt tgctctggat ctctggtgcc 60
tacggggaca tcgtgatgac ccagtctcca gactccctgg ctgtgtctct gggcgagagg 120
gccaccatca actgcaagtc cagccagagt gttttataca gctccaacaa taagaactac 180
ttaacttggt accagcagaa accaggacag cctcctaagc tgctccttta ctgggcatct 240
acccgggaat ccggggtccc tgaccgattc agtggcagcg ggtctgggac agatttcact 300
ctcaccatca gcagnctgca ggctgaagat gtggcagatt attactgtca gcaatattat 360
actactccct ggacgttcgg ccactggacc aangtggaaa tcanacgaaa ctgtggctgc 420
accatntgcc tcatntttcc gccatctggt gancagttga aat 463

<210> 454
<211> 332
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (95)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<400> 454
tggctcatct tggctgtgat ttcagtatat gatttagtgg ctgttttgtg tccgaaaggt 60
ccacttcgta tgctggttga aacagctcag gaganaaatg aaacgctttt tccagctctc 120
atttactcct caacaatggt gtggttggtg aatatggcag aaggagaccc ggaagctcaa 180
aggagagtat ccaaaaattc caagtataat gcagaaagca cagaaaggag tcacaagaca 240
ctgttgcaga gaatgatgat ggcgggttca gtgaggaatg ggaagcccag aaggacagtc 300
atctagggcc tcatcgctct acacctgaat cn 332

<210> 455
<211> 429
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (99)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (105)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (107)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (109)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (143)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (158)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (172)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (243)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (271)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (274)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (292)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (314)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (346)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (392)
<223> n equals a,t,g, or c

<400> 455
ggcnagtagt nnggggtccc agggtttgtt tttaaagtag tgacttctac caacatgtcc 60
cgtggttcca gagagcggtt ttgaccgcca cattaccant ttttnancng agggtcggct 120
ctaccaagta ggaatatgct ttnaaggnta ttaaccangg tggacttaca tnagtagctg 180
atcagcggga aagactgtgc agtaattgtc acacagaaga aagtacctga caaattattg 240
gantccagca cagtgactca cttattcaag ntanctggaa acattggttg tntgaagacc 300
ggaatgtcag ctgncagcag atcccaggta cagagggcac gctatnaggc agctaacttg 360
gaatacaagt atggctatga gnttcctgtg gncatgcctg tgtaaaagga tttccggtat 420
ttctcaggt 429

<210> 456
<211> 623
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (38)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (352)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (482)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (516)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (540)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (554)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (570)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (588)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (604)
<223> n equals a,t,g, or c

<400> 456
tggcggcttc cttcacccgc aaccccgagag acgacccncc gggcccgccc cgcggaagcc 60
gccggttgcc aggccaagga gtggactagg gtcgccgggg aagcggtttg ggagagccca 120
tggtgactgc gtgagtggag cccagctgtg tggatgcccc agcatggatg actacatggt 180
cctgagaatg attggggagg gctcgttcgg cagagctctt ttggttcaac atgaaagcag 240
taatcaagat gtttgccatg aaagaaataa ggcttccaag tctttctcta atacacagaa 300
ttctaggaag gaggctgttc ttttagccaa aatgaaacac cctaatattg gngccttcaa 360
agaatcattt gaaagctgca ggacacttgt atattgtgat ggaatactgt gatggacggg 420
atctaatgca aaagattaaa cagcagaaaa ggaaaagtta tttcctgaag acatgatact 480
tnaatggttt acccaaatgt gccttggagt aaaatnacat ttaccaagaa acgtgtgctn 540
cccaagagat tttnaaagtc ccaaaaaatn tttttcctta acctcaanaa ttgggaaaaa 600
gttnaaaatt ggggaaaaac ttt 623

<210> 457
<211> 441
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (20)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (185)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (223)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (233)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (250)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (391)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (399)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (417)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (432)
<223> n equals a,t,g, or c

<400> 457
atccngaaac tgnaanccgn tgtgtcanct gaaaaaccat tcggtgtgtc tgcacttgga 60
ggctgcactt gcttgcttcc acttatgctt gttctcagaa cacaaacaaa acctgtgaag 120
agtgcctgaa aaacgtctcc tgtctttggt gcaacactaa caagcttgtc ttggactacc 180
agttncaaag tcttgccacc ggcttccctt tgttaattaa ctncttgcac ctngggaatt 240
ttgttgggtn aaacttagaa gcgctgaatc atcacatgtt cggtagtccg gggaaccctc 300
ctcctggggc attggcatct gctgcttgct tgcttgctgc aagaagaaaa aaagaacccg 360
aaacccggac aggaattaaa gaaaaaaggc nttgcgttna accggaaaga aaaagcngaa 420
taccggccgg angaacggaa a 441

<210> 458
<211> 419
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (252)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (278)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (306)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (402)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (404)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (408)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (409)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (410)
<223> n equals a,t,g, or c

<400> 458
ncttcctnta ggagcaggag ggatgagcaa gggtctccca gcgcgacagg acatggagaa 60
agagcgagag actctgcagg cctggaagga gcgcgtgggg caggagctgg accgcgtggt 120
ggctttctgg atggagcact cccacgacca ggagcacggg ggcttcttca cgtgccttgg 180
ccgcgagggg cgggtgtatg atgacctcaa gtatgtgtgg ctgcaggggа ggcaggtatg 240
gatgtattgt cngcctgtac cgcactttcg agcgcttncg ccatgctcag cttctggacg 300
cagcanaagc aggtggtgag ttcttgctgc ggtatgcccg ggtggcacct tctggcaaga 360
agtgtgcctt tgtgctgact cggtgacggc cgcccggtca angngcannn aaccatctt 419

<210> 459
<211> 509
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (284)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (308)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (331)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (369)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (377)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (393)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (405)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (410)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (414)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (419)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (424)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (440)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (472)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (485)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (490)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (493)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (499)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (502)
<223> n equals a,t,g, or c

<400> 459
aattcggcac gagctgaagt nactgatgag tataaaaatn atgtaaaaaa cagatctgtt 60
tatattaaag gcttcccaac tgatgcaact cttgatgaca taaaagaatg gttagaagat 120
aaaggtcaag tactaaatat tcagatgaga agaacattgc ataaagcatt taagggatca 180
atttttgttg tgtttgatag cattgaatct gctaagaaat ttgtagaggc ccctggccag 240
aagtacaaag aaccagacct gctaatactt ttcaaggccg gttnctttgc caaaaaatga 300
ggaagaanca aataagtgga gctaattagg nttacagggc agagcaacca agttgaggag 360
tcctgatgna ctctggngaa gttggtcctt ctnatttcgg ggttngtgcn gccntgggng 420
ttcncacttt tcatcagggn taatgtgctc ccaggccagg gttttttttag anccggcttg 480
taccngtcan tgnccccctng cnggtcttg 509

<210> 460
<211> 468
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (20)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (445)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (459)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (465)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (468)
<223> n equals a,t,g, or c

<400> 460
cgccttttgg taccggtccn gaattcccgg ggcttccctc ctcttccttt cttcgccatc 60
gtggtgtgtt cttgactccg ctgctcgcca tgtcttctca caagactttc aggattaagc 120
gattcctggc caagaaacaa aagcaaaatc gtcccattcc ccagtggatt cggatgaaaa 180
ctggaaataa aatcaggtac aactccaaaa ggagacattg gagaagaacc aagctgggtc 240
tataaggaat tgcacatgag atggcacaca tatttatgct gtctgaaggt cacgatcatg 300
ttaccatatc aagctgaaaa tgtcaccact atctggagat ttcgacgtgt tttcctctct 360
gaatctgtta tgaacacgtt ggttggctgg attcagtaat aaatatgtaa ggcctttctt 420
tttaaaaaaa aaaaaaaaaa aaaanaaaan acaaaaaana tcaanaan 468

<210> 461
<211> 580
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (54)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (249)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (340)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (427)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (433)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (452)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (462)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (466)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (470)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (472)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (478)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (509)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (510)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (556)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (567)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (575)
<223> n equals a,t,g, or c

<400> 461
gggggggggng ggggggtntt aggtttgcct aaaaatattt aggtgacact atanaaggta 60
cgcctgcagg taccggtccg gaattcccgg gtcgacccac gcgtccgtcg acccacgcgt 120
ccgcccacgc gtccgcccac gcgtccgccc acgcgtccgc tgtgtcgtaa aatgggggtc 180
ccttactgca ttatcaaggg aaaggcaaga ctgggacgtc tagtccacag gaagacctgc 240
accactgtng ccttcacaca ggtgaactcg gaaagacaaa ggcgctttgg ctaagctggt 300
ggaagctatc aggaccaatt acaatgacag atacgatgan atccgcccgt ccactggggt 360
tggcaatgtt ccctgggtcc ctaattcttg ttgctccgta tcgcccaact ccgaaaaagg 420
caaaagntta aanaactttg ccacttaaac tngggttaaa tnttcnctgn tnaatttncc 480
ctgttccctt aaaaataatt gaaattatnn aatttccccc tccccaaaaa aaaaaaaaaa 540
gggggcccc ttaaanattc ccccccnaag gggcnaatta 580

<210> 462
<211> 549
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<400> 462
acngnganac nancctcact aaagggaaca aaagctggag ctccaccgcg gtgcggccgc 60
tctagaacta gtggatcccc cgggctgcag gaattcggca cgaggcgccg ccacaatggt 120
gcgcatgaat gtcctggcag atgctctcaa gagtatcaac aatgccgaaa agagaggcaa 180
acgccaggtg cttattaggc cgtgctccaa agtcatcgtc cggtttctca ctgtgatgat 240
gaagcatggt tacattggcg aatttgaaat cattgatgac cacagagctg ggaaaattgt 300
tgtgaacctc acaggcaggc taaacaagtg tggggtgatc agccccagat ttgacgtgca 360
actcaaagac ctggaaaaat ggcagaataa tctgcttcca tcccgccagt ttggtttcat 420
tgtactgaca acctcagctg gcatcatgga ccatgaagaa gcaagacgaa aacacacagg 480
agggaaaatc ctgggattct tttctaggg atgtaataca tatatttaca aataaaatgc 540
ctcatggac 549

<210> 463
<211> 480
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (130)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (320)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (410)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (416)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (455)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (456)
<223> n equals a,t,g, or c

<400> 463
gcctctngcg ggccctgttc aagcggaatc ctgccaaccg gctcggctcc ggccctgatg 60
gggcagagga aatcaagcgg catgtcttct actccaccat tgactggaat aagctatacc 120
gtcgtgagan cacgccaccc ttcaagccag cagtggctca gcctgatgac accttctact 180
ttgacaccga gttcacgtcc cgcacaccca aggattcccc aggcatcccc cccagcgctg 240
gggcccatca gctgttccgg ggcttcagct tcgtggccac cggcctgatg gaagacgacg 300
gcaagcctcg tgccccgcan gcacccctgc actcggtggt acagcaactc catgggaaga 360
acctggtttt tagtgacggc tacgtggtaa aggagacaat tggtgtgggn tcctantctg 420
agtgcaagcg ctgtgtccac aaagggccan aacannaata atgcaatagg ggaggtaaca 480

<210> 464
<211> 220
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (42)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (63)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (67)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (105)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (129)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (147)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (157)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (170)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (213)
<223> n equals a,t,g, or c

<400> 464
agggacacgt cccatnnngt ggcgggcgcn ctgcggccct tngtgcaggc cacggtgncc 60
gcnaccngaa gncagcctgt tttggaccta aagcggccct tcctnagccg ggagtcgctg 120
agcggccang cctgcgatcg acttgtngtc gactccntgg gtgctcaatn tccctgcttc 180
tttttgttaa ttcccacaca gacatcaagg tgnctgattt 220

<210> 465
<211> 438
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (330)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (383)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (403)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (414)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (428)

<223> n equals a,t,g, or c

<400> 465
ataggcatga gccaccacgc caggccggga atgccctatt ctaattcaca taaagactcc 60
atgtgggcta gcaggcatgt gaaatgtctg ccagtgcatc aacagctata taactaagaa 120
gttatctttt tcactgtctt ctggtactct tcatttcact tgggtttttt agcaattcag 180
gaagctggaa tgtttgaatg ggttttagct tgataccttc ttctttttcc catttggcag 240
ataataccac tagtctgacg gataaacacc tggacccaat cagggaaaat ctgggaaagc 300
actgggaaaa actgtgcccg taaactgggn ttcacacagt ctcagattga tgaattgacc 360
atgacnatga gcgagatgga tgnaagaaag gttaccagat gcnccaaaat gggngatgag 420
gaaggctnaa ggggcccg 438

<210> 466
<211> 127
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
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<222> (53)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (87)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (94)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (118)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (122)
<223> n equals a,t,g, or c

<400> 466
gcacgattca tgcaaaaagg naactaagca ctatgagatg cttgctaatc gancagctgc 60
aaatggtcac tgcattgata tttatgnttg tgcncctgat caaactggac ttttgganct 120
gnagtgt 127

<210> 467
<211> 439
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (194)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (295)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (409)
<223> n equals a,t,g, or c

<400> 467
gctggaatct ttacaggaga accacttcca agaagatgan cagtttctgg gagccgttat 60
gccaaggctt ggcattggaa tggatacttg tgtcattcct ttgaagcacg gtgggctttc 120
cttggttcaa accacagatt acatttaccc gatcgtagac gacccttaca tgatgactcc 180
tgcagttgct gaantcaggc ctgtcccctg cccacacttg gcactgggca taaagcaatt 240
agggaggaag caggaaagcc ctctgctgct gttgcaactg aatacatgct ggcangataa 300
catgtgccaa tgtcctcagt gactctatgc aatgggggtc acggaatgtg acaatatgct 360
gatgctcctt ggaatcataa taaaatgacc gacaggaaaa ggataaatna tcctctgatt 420
atccaaggtt ttaaaacca 439

<210> 468
<211> 484
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (350)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (399)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (412)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (415)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (463)
<223> n equals a,t,g, or c

<400> 468
gagcaggccc gttggaagtg gttgtgacaa ccccagcaat gtggagaagc ctggggcttg 60
cctggctctc tgtctcctcc catcgggagg aacagagagc caggaccaaa gctccttatg 120
taagcaaccc ccagctggac ataagagatc aagatcaatg ctaaactcca atggttcagt 180
gactgtggtt gtcttcttca agccagctga tacctgtcat actgcaggca tctaaattag 240
aaacctgcga gtaaaactga agaaagaagg atattctaat attcttatat tgtgtaatat 300
taaggaatct cttctcgata aaatcacaca tctaagaata aggttaaaan atatttctgt 360
tataccagaa gaaacaacaa tgctgactct ttaatgaana aatactctat antanatggg 420
cgctgaatac tgttgctttc tcacttcang aaaacataat gtntgaaaat ggacgtttca 480
ttaa 484

<210> 469
<211> 489
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (308)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (368)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (371)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (387)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (417)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (420)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (468)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (477)
<223> n equals a,t,g, or c

<400> 469
cgcctggcga ttaccggtct caccatggag cggaaagtgc ttgcgctcca ggcccgaaag 60
aaaaggacca aggccaagaa ggacaaagcc caaaggaaat ctgaaactca gcaccgaggc 120
tctgctcccc actctgagag tgatctacca gagcaggaag aggagattct gggatctgat 180
gatgatgagc aagaagatcc taatgattat tgtaaaggag gttatcatct tgtgaaaatt 240
ggagatctat tcaatgggag ataccatgtg atccgaaagt taggctgggg acacttttca 300
acagtatngg ttatcatggg gtattccagt taagttttaa ttggttcntg taaaaagatt 360
agttaganga ngtctaaaag ggtttgnctg agttccatgg tggacccagg ttcaacnacn 420
ctagccggtc cattaccaga atttgttgtt ggcaaagncc cgatcctngg ggaaccnttt 480
ctttcggaa 489

<210> 470
<211> 318
<212> DNA
<213> Homo sapiens

<220>
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<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (73)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (102)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (103)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (106)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (114)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (151)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (188)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (223)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (258)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (264)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (280)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (281)
<223> n equals a,t,g, or c

<400> 470
cntcactata tntgaggagc nggtacccct gnaggtaccg gtccggaatt cccgggtcga 60
cccacgcgtc cgntatgaca acctgatcac accagccatg annggngccg gctncctgca 120
ggggaacgtc gattcttgcc agggtgacag nggagggcct ctggtcactt cgaagaacaa 180
tatctggngg ctgatagggg atacaagctg gggttctggc tgngccaaag cttacagacc 240
aggagtgtac gggaatgnga tggnattcac ggactggatn natcgacaaa tgagggcaga 300
cggctaatcc acatggct 318

<210> 471
<211> 455
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (306)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (417)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (426)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (431)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (440)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (446)
<223> n equals a,t,g, or c

<400> 471
ggagtataca ccatgagcaa agctcaccct cccgagttga aaaaatttat ggacaagaag 60
ttatcattga aattaaatgg tggcagacat gtccaaggaa tattgcgggg atttgatccc 120
tttatgaacc ttgtgataga tgaatgtgtg gagatggcga ctagtggaca acagaacaat 180
attggaatgg tggtaatacg aggaaatagt atcatcatgt tagaagcctt ggaacgagta 240
taaataatgg ctgttcagca agagaaaccc atgtcctctc tccatagggc ctgttttact 300
atgatnttaa aaattaagtc atgtacattt tcatattaaa ctttttgtta aataaacttt 360
tgtaataatc aaaaaaaaaa aaaaaaaaaa aaacccaagg gggggcccgg tccccantcc 420
cccctntttt nattcctttn aaaatnccct ggccc 455

<210> 472
<211> 676
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (605)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (669)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (672)
<223> n equals a,t,g, or c

<400> 472
gctccaggag tgggacggag ggagctggcc gggatgaagt ctgagactat gtcctgagaa 60
gaaagagtgt atcgtattgg ttgaaaagtt ggtggggtcg ggcttaagcg gaggaggggg 120
ctctctggcc cttactcggc agatgggccc ggagagagga cgggaggtgc cgggagaaca 180
tcgagggacc ggtggaggaa gggtagctgg atgagttttg attcatcatg gataatctgt 240
catcagaaga aattcaacag agagctcacc agattactga tgagtctctg gaaagtacga 300
ggagaatcct gggtttagcc attgagtctc aggatgcagg aatcaagacc atcactatgc 360
tggatgaaca aaaggaacaa ctaaaccgca tagaagaagg cttggaccaa ataaataagg 420
acatgagaga gacagagaag actttaacag aactcaacaa atgctgtggc ctttgtgtct 480
gcccatgtaa tagaacaaag aactttgagt ctggcaaggc ttataagaca acatggggag 540
atggtggaga aaactcacct tgcaatgtag tatctaaaca gccaggcccg gtgacaaatg 600
gtcancttta gcaaccaaca acaggagcag ccagtggtgg atacattaaa cccataacta 660
atgatcccng anaaga 676

<210> 473
<211> 512
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (403)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (457)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (487)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (495)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (500)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (506)
<223> n equals a,t,g, or c

<400> 473
ntcgacagaa gggtacggct gcgagaagac gacagaaggg tacggctgcg agaagacgac 60
agaagggggc agcatggcgt acccggggca tcctggcgcc ggcggcgggt actacccagg 120
cgggtatgga ggggctcccg gagggcctgc gtttcccgga caaactcagg atccgctgta 180
tggttacttt gctgctgtag ctggacagga tgggcagata gatgctgatg aattgcagag 240
atgtctgaca cagtctggca ttgctggagg atacaaacct tttaacctgg agacttgccg 300
gcttatggtt tcaatgctgg atagagatat gtctggcaca atgggtttca atgaatttaa 360
agaactctgg gctgtactga atggctggag acaacacttt atnaattttt gacactgcag 420
gaatggaaca agtagaccca caagaattgg ataaagnccc tgacaacaat gggatttaag 480
gtttgantcc ccaanctggn gaattnaatt gc 512

<210> 474
<211> 272
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (59)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (69)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (74)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (122)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (129)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (150)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (185)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (186)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (191)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (234)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (249)
<223> n equals a,t,g, or c

<400> 474
ggcacagcgg cgggcccngt cgtccggcgg ttgcggatgt cgggctgggc ggacgagcnc 60
ggcgtcgang gccnacgggc gcatctacgt ggggaacttc cgancgacgt gcgcgagaag 120
gnacttggna ggacctgttc tacaagtacn gccgcatccg cgagatcgag ctcaagaacc 180
ggcannccte ntcctgtcgg ccttcgtgcg cttcgaggaa cccccgagat gcanaggatg 240
ctatttatng gaagaaatgg ttatgattat gg 272

<210> 475
<211> 338
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
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<222> (36)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (119)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (127)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (170)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (173)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (204)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (250)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (284)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (298)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (308)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (318)
<223> n equals a,t,g, or c

<400> 475
naatctcngt ttggnnggcc cgcccgcagg tccggnccgg aactcccggg tcgacccacg 60
cgtccggcta ccattctgaa acaaatgcaa gtattacatc cagcagccag aatgctggng 120
gagctgncta aggctcaaga tatagaagca ggagatggca ccacatcagn agncatcatt 180
gctggctccc tcttagattc ttgnaccaag cttcttcaga aagggattca tccaaccatc 240
atttctgagn cattccagaa ggccctggaa aagggcattg aaancttgac tgacatgnct 300
cgacctgngg aactgagnga cagagaaact ttggtaaa 338

<210> 476
<211> 424
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (330)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (378)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (381)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (388)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (424)
<223> n equals a,t,g, or c

<400> 476
ttaagttcat gaattccaga gttttcaaga aaattcaagc tttgaaggct tcaccgtcta 60
agaaacggtg caattcaatc gccgccctaa aggccacttc acaggagatt gtgtcctcaa 120
ttagccagga atggaaggat gagaagcggg atttgctgac tgaaggacaa agttttagca 180
gccttgatga agaagccctg ggatcccgac acaggccaga cctggtccct agcactccat 240
cactgtttga agctgcttcc ttggcaacca caatttcact tcttcctata cgtcaatggg 300
cattatccac aagacaaggc ctacaatttn ttcaaaccag gtaatatttt ggtgcaattc 360
aaattaaccc ttcaaggntt nttaaccnca atcaaccatt agggcctgaa cccgtttttt 420
ttgn 424

<210> 477
<211> 228
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (71)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (110)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (111)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (153)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (157)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (165)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (207)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (223)
<223> n equals a,t,g, or c

<400> 477
ggcatncatg tcttcagaaa catccataag accaatctct gtgatcttat caccagcctt 60
ttgtgccttt nggttctttt gccaaccaaa gaactcaatg aacacttctn ntccaagctt 120
aaggcaccga ttcctattga acttgttgtt gtngtancag ccacnttaac ctctcatttt 180
ggaaaactac atgaaaatta taattcnagt attgctggac atnttccc 228

<210> 478
<211> 486
<212> DNA
<213> Homo sapiens

<400> 478
aactagtctc gaacggcccc gcggacacgc tggatctgac ctactggatt gacggcaccc 60
ggcatgtggt ctccctggag gacgtcggcc tggctgactc gcagtggaag aacgtcaccg 120
tgcaggtggc tggcgagacc tacagcttgc acgtgggctg cgacctcata gacagcttcg 180
ctctggacga gcccttctac gagcacctgc aggcggaaaa gagccggatg tacgtggcca 240
aaggctctgc cagagagagt cacttcaggg gtttgcttca gaacgtccac ctagtgtttg 300
aaaactctgt ggaagatatt ctaagcaaga agggttgcca gcaaggccag ggaggtaggt 360
gtgttgtgaa aaatgcattt tatatactgg cttggatgga tttctattgt gacatggtgt 420
atgtgtgtgt gtgtatgtgt gtgcattcat gcttgtaaaa atttaagtaa aaatatttgg 480
gtaact 486

<210> 479
<211> 524
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (70)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (369)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (409)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (432)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (471)
<223> n equals a,t,g, or c

<400> 479
ggtgcctgct gcctcaaacc accttgtgta aaatctgcaa tacggcttct tccatgtacc 60
tgtgcctgan ctgtctgcaa taaagaagaa tttgtaaaaa aacggcacct cgctttgctt 120
ttcctccgca accatgtctg acaaacccga tatggctgag atcgagaaat tcgataagtc 180
gaaactgaag aagacagaga cgcaagagaa aaatccactg ccttccaaag aaacgattga 240
acaggagaag caagcaggcg aatcgtaatg aggcgtgcgc cgccaatatg cactgtacat 300
tccacaagca ttgccttctt attttacttc ttttagctgt ttaactttgt aagatgcaaa 360
gaggttggnt caagtttaaa tgactgtgct gccccttca catcaaagna ctactgacaa 420
cgaaggccgc gnctgccttt cccatctgtc tatctatctg gctggcaggg naggaaagaa 480
cttgcatgtt ggtgaaggaa gaagtggggt ggaagaagtg gggt 524

<210> 480
<211> 306
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (34)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (52)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (64)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (66)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (76)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (97)
<223> n equals a,t,g, or c

<220>
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<222> (126)
<223> n equals a,t,g, or c

<220>
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<222> (275)
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<220>
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agtntnaggc acaggngcag agaagactgg cgtgtgnccc gagctccagg ctgcaccagc 120
aactgncann cannagtgcg tcctnnggaa cagcgaaatg ncccgnacaa cctccaagtg 180
nctgcnaggc gggnctgtgn caccttctgc ctctctgccc caatgatgaa ggngggttcc 240
tgcccccagg tgnaacatta aactttnccc aggtngggcc tctgttcggg caccatgcca 300
ggtngt 306

<210> 481
<211> 473
<212> DNA
<213> Homo sapiens

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<222> (411)
<223> n equals a,t,g, or c

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<222> (418)
<223> n equals a,t,g, or c

<220>
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<222> (431)
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<220>
<221> misc feature
<222> (445)
<223> n equals a,t,g, or c

<220>
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<222> (459)
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<400> 481
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agaccccttg agcaccaacc ctagtccccc gcgcggcccc ttattcgctc cgacaagatg 120
aaagaaacaa tcatgaacca ggaaaaactc gccaaactgc aggcacaagt gcgcattggt 180
gggaaaggaa ctgctcgcag aaagaagaag gtggttcata gaacagccac agcagatgac 240
aaaaaacttc agttctcctt aaagaagtta ggggtaaaca atatctctgg tattgaagag 300
gtgaatatgt ttacaaacca aggaacagtg atccacttta acaaccctaa agttcaggca 360
tctntggcag cgaacacttt caccattaca ggccatgctg agacaaagca nctgacanaa 420
atgctaccca ncatcttaaa ccagnttggt gcggatagnc tgactaagtt taa 473

<210> 482
<211> 571
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (92)
<223> n equals a,t,g, or c

<220>
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<222> (297)
<223> n equals a,t,g, or c

<220>
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<222> (307)
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<220>

<221> misc feature
<222> (494)
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<221> misc feature
<222> (565)
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<220>
<221> misc feature
<222> (569)
<223> n equals a,t,g, or c

<220>
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<222> (571)
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<400> 482
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gatgacggtn ccgggcgcct ctcccgagga cncttgggtc aaggtggagt atgcctacag 120
cgacaacagc ctggaccccg ggctttttgt agaaagcacc cgcaagggga gtgtagtgtc 180
cagagctaat agcatcggtt ccaccagtgc ctcttctgtc cccaacacag atgatgagga 240
cagtgattac caccaggagg cctacaagga gtcctacaaa gaccggcggc ggcgcgnaac 300
acacttnagg cttgagcaga agaggaggga cgccatcaag agaggctatg atgaccttca 360
gaccatcgtc cccacttgcc agcagcagga cttctccatt ggctcccaaa agctcagcaa 420
agccatcgtc tacaaaagac cattgactac attcagtttt tgcacaagga gaagaaaaag 480
caggaggagg aggngtcacg ttacgcaagg atgtaccggc ctaaagatca tgaaagtgaa 540
ctatgagcan attgtgaagg cacantagna n 571

<210> 483
<211> 220
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (69)
<223> n equals a,t,g, or c

<220>
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<222> (71)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (99)
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<220>
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<222> (136)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (179)
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<220>
<221> misc feature
<222> (183)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (185)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (215)
<223> n equals a,t,g, or c

<400> 483
aatacaacgg gaatcnctaa ctgccttgcg tgaaggtccc ggtccggaat tcccgggtcg 60
acccacgcnt ncgggccagg atgctgaatc tgctgctgnt ggcgctggcc gtcctggcga 120
gccgcgccta cgcggnccct gccccaggcc aggccctgca gcgagtgggc atcgtcggng 180
gtnangaggc ccccaggagc aagtggccct ggcangtgag 220

<210> 484
<211> 439
<212> DNA
<213> Homo sapiens

<220>
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<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
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<222> (31)
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<220>
<221> misc feature
<222> (35)
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<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (394)
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<220>
<221> misc feature
<222> (406)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (414)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (434)
<223> n equals a,t,g, or c

<400> 484
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cgctctagaa ctagtggatc ccccgggctg caggaattcg gcacgagcag cccagcagcg 120
gctgaccctc tgcctgcggg gaagggagtc gccaggcggc cgtcatggcg gtgtcggaga 180
gccagctcaa gaaaatggtg tccaagtttt taacgatggc agttccaggg aactaatgaa 240
cctcactgga acaatccctg tgccttatag aggtaataca tacaatattc caatatgcct 300
atggctactg gacacatacc catataatcc ccctatctgt tttgttaagc ctactagttc 360
aatgactatt aaaacaggaa agcatgttga ttgnccaaaa aaattngggg gggnaaaaaa 420
ggggaaaatt ttanttttt 439

<210> 485

<211> 115
<212> DNA
<213> Homo sapiens

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<222> (71)
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<220>
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<222> (87)
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<220>
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<222> (89)
<223> n equals a,t,g, or c

<220>
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<222> (104)
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<400> 485
gacaaagtaa ngcatccctc ctgaccatca gacgttgatc tttgctggga aacatctgga 60
aaatggacnc ncctgtctg actacancnt ccacaaagaa tccnccctgc acctg 115

<210> 486
<211> 558
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<222> (270)
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<222> (353)
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<221> misc feature
<222> (402)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (404)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (410)
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<220>
<221> misc feature
<222> (416)
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<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (488)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (495)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (517)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (539)
<223> n equals a,t,g, or c

<400> 486
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ttcttttagc atcaaggaat ctgatgagaa agcaggaaag atcttttcac agatgaacaa 120
tattatgagt aaaagtttgc atgatgatgg ntttactgnt ccacagatta ttgaaatgga 180
gctggatagt caggagcaag ttgttgttgc aggatcctcc tgtgacttac attcagcaat 240
ttgcagatgc agcanccaac cttacctctn cggattctga gaagtggaac tctgtgtttc 300
ccaagcctgg gactttggtt caagtgcttg aggctgcaaa gtttgcatag gangagaatc 360
tttgtataac tcaataactc cttgtgctga cggaattcat tngntggtan gactgnggac 420
atgccctgtt gaatccttga gtgcaataaa tcaaagtaga aggccttgna taatttaaat 480
taaattanac tctgnactat gtaataaccg gaaaggnaac tgcaatcaaa tttgcttgna 540
tggaatgggg caaaatta 558

<210> 487
<211> 354
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (15)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
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<222> (21)
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<220>
<221> misc feature
<222> (79)
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<222> (114)
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<222> (115)
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<222> (120)
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<220>
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<220>
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<220>
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<222> (203)
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<222> (229)
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<220>
<221> misc feature
<222> (239)
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<220>
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<222> (307)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (315)
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<220>
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<222> (339)
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<222> (343)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (346)
<223> n equals a,t,g, or c

<400> 487
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tcaaggtctc gctcagctna aggcatgtac ctacaaaggt cacaagacag gtgnnactgn 120
agagcanata tgggagatcc agaaggatca acttntatac tatccattct taaaaatgtg 180
cctttcagca aatgntgagc atncaagctt agtggatgca acccatcana accactccna 240
aaatggatac ttagccaaaa tgattaagcg ttccttaaaa ttaacttgac caaggaaata 300
tcctttntca taaanctgtg actaggcata cactgtagnt gtnganaatt atgc 354

<210> 488
<211> 508
<212> DNA
<213> Homo sapiens

<220>
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<222> (134)
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<222> (236)
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<222> (242)
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<222> (258)
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<222> (275)
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<220>
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<222> (288)
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<220>
<221> misc feature
<222> (298)
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<220>
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<222> (300)
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<221> misc feature
<222> (314)
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<220>
<221> misc feature
<222> (349)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (351)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (375)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (387)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (400)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (407)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (412)
<223> n equals a,t,g, or c

<220>
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<222> (413)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (424)
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<220>
<221> misc feature
<222> (429)
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<220>
<221> misc feature
<222> (434)
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<220>
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<222> (440)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (441)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (456)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (462)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (475)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (478)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (485)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (493)
<223> n equals a,t,g, or c

<400> 488
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aaatgacttc tgaagattta gaaaatgctc taaaagcagt catcaatgac aaaagttaca 120
aggagaacat catncgcctc tccagccttc acaaggaccg cccggtggag ccgctggacc 180
tggccgtgtt ctgggtggag tttgtgatga ggcacaaggg cgcgccacac ctgcgncccg 240
cnccccacgg acctcacntg gtaccagtac cattnccttg gccgtgantt ggtttccntn 300
ttggcccttg gtcntgaaat tggccttaat aacctttaaa attttgctnt natggttacc 360
cgaaaatttt ggggnaaaaa agggccnttt aagaaagccn caaaatnaga cnnccttttg 420
aaangggtng gganaaaggn naaaattttn accttncncg gnatttccna atttnaanag 480
atagngttta aanatttttt tttttagg 508

<210> 489
<211> 425
<212> DNA
<213> Homo sapiens

<220>
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<222> (3)
<223> n equals a,t,g, or c

<400> 489
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ggctgctctg ggggatgagc tggtgcgttt aaggaacagg ccagcactgg cattcgcaag 120
cagtggggaa ggggagagat gccgaggtgg tcagtatcct gactttcaga ggcctttttt 180
tgtttgtttt aatttttgct agattgatat taaaaactca tgtggaggaa ctcaaggaat 240
gtttagaaga ccaaaagtcc ccaatgacag gaacaaaagc aaccaatttt taactttctc 300
ttctcattcc tgttttcatt gatttcccac atgtagtcct tttgctcagg aagtctttgg 360
ggaaattaag gatctttgaa gctctgaaat aggtgatcag gttagtggtg tctgtcagct 420
gtctg 425

<210> 490
<211> 607
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (6)
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<221> misc feature
<222> (8)
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<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (443)
<223> n equals a,t,g, or c

<400> 490
ancannenna caccacctca ctaaagggaa caaaagctgg agctccaccg cggtgcgncc 60
gctctagaac tagtggatcc cccgggctgc aggaattcgg cacgagaagc cgtcaaggag 120
tagaaattgg tatgcttaga agcagattct aaaagcagtt tctcttcaga acatcttttt 180
tcataccact tgataagcat cttgaaacac catggctgta gctgcagtaa aatgggtgat 240
gtcaaagaga actatcttga aacatttatt tccagtccaa aatggagctt tatattgtgt 300
ttgtcataaa tctacgtatt ctcctctacc agatgactat aattgcaacg tagagcttgc 360
tctgacttct gatggcagga caatagtatg ctaccacccct tctgtggaca ttccatatga 420
acacacaaaa cctatccctc ggncagatcc tgtgcataat aatgaagaaa cacatgatca 480
agtgctgaaa accagattgg aagaaaaagt tgaacacctt gaggaaggac ctatgataga 540
acaacttagc aaaatgtttc tttactacta agcaccgttg gtatcctcat ggacggtatc 600
acagatg 607

<210> 491
<211> 371
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (81)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (265)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (336)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (339)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (353)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<220>
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<222> (368)
<223> n equals a,t,g, or c

<400> 491
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gattgagttg cttctggagt nggcagggtc actgtgaacg cctacgtgag cctcttctac 120
accataaagc gggcacaagt ggtcagtcct gaaagagtcg gaagctggca tatcggccgc 180
ccaagtgacc ctgtccagtg tctgcttgcc atcctgccag aacaggccct caagcccaag 240
agccatccca ggcctgtttc agctncagct aaagcctctc tttcatctgg aagaagaggc 300
aagggggcag gagaccaggc tctagctctg gggccntcnt tcagcccccca tcnggggaat 360
aaanttantt t 371

<210> 492
<211> 440
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (347)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (353)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (397)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (402)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (434)
<223> n equals a,t,g, or c

<400> 492
ttgagtcgtg ttaatgtaag aatgactcct atcattagga gtgctgctcg gaggttactc 60
acctttggga gtaatactga agagaggggt ctgcagaaag gatgtgtatg aagcttagat 120
aataatggct gtttcgtaaa ctgtttgaga cctattaatg aaaatgacta tttcttgctg 180
tttttatcca acgtctgcat tttccccctt taaagctgcg gtctcctgtt tgataaaaga 240
atattggcca gtattgcaga ttttaactgg atttggctga tcctccaggg gaccagtttc 300
tgtgggcgtg tattggagca ggtttgtctt taactcttaa atggttnggt ccnaattttt 360
aaaaaggaag ggccccaagt agcccagatt taaaggngta tncccattcc caaagttcct 420
tggaacaatt accnaaagga 440

<210> 493
<211> 90
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)
<223> n equals a,t,g, or c

<220>
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<222> (20)
<223> n equals a,t,g, or c

<220>
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<222> (27)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (56)
<223> n equals a,t,g, or c

<400> 493

ngggagctgg cctggagcgn atgggcnccg tgatggatcg catggccanc ggctgncagc 60
gcatgggccc atcaatctgg agcggatcgg 90

<210> 494
<211> 218
<212> DNA
<213> Homo sapiens

<220>
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<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
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<222> (46)
<223> n equals a,t,g, or c

<220>
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<222> (47)
<223> n equals a,t,g, or c

<220>
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<222> (53)
<223> n equals a,t,g, or c

<220>
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<222> (78)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (87)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (95)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (135)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (163)
<223> n equals a,t,g, or c

<220>
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<222> (167)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (192)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (216)
<223> n equals a,t,g, or c

<400> 494
gggtcgaccc acgcggtccg tttttttntn tttttttagn tcccannttt tantcaagaa 60
ctcatacaaa attttccnga taaatgnaat ttaancctcg tcttcctcct cttcttcgtc 120
ctggttaatc tgggnagtaa cgtaattcgt aactctcttt ggntgtnagc aactgacgcg 180
caaccagttc angtagatta ttcttcttca aatatngt 218

<210> 495
<211> 148
<212> DNA
<213> Homo sapiens

<220>
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<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (83)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (96)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (111)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (116)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (122)
<223> n equals a,t,g, or c

<400> 495
gtttttaaaa aaaacatgtc atgtangttg tctaaaaata aaatgcattt aaactcaaaa 60
aaaaaaaaaa aaaaaaaaaa aanagggggg gggcgnggga aaaaaaaaaa ngaggntgag 120
gntttgaaga agggaagggg ggcccccc 148

<210> 496
<211> 536
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (355)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (412)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (444)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (460)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (484)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (534)
<223> n equals a,t,g, or c

<400> 496
atgacccaca ctgccagaag agaattcagt attttttact tttcacactg tcttcccgat 60
gagggaagga gcccagccag aaagcactac aatcatggtc aagttcccaa ctgagtcatc 120
ttgtgagtgg ataatcagga aaaatgagga atccaaaaga caaaaatcaa agaacagatg 180
gggtctgtga ctggatcttc tatcattcca attctaaatc cgacttgaat attcctggac 240
ttacaaaatg ccaagggggt gactggaagt tgtgggatat cagggtataa attatatccg 300
tgagttgggg gagggaagac cagaattccc ttggaattgt gtattgatgc cattntaagc 360
ctaaaagatc accttgtatt cnctttacct tctaaaagcc attatttatg gngttagaag 420
aagaggaaga aattcaggta ccgnaaaaca cttttgttcn gggggggccc cgtacccaat 480
tcgncccata gtgagtcgta ttacaatcac gggccgtcgt ttacacggcg gacngg 536

<210> 497
<211> 93
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (84)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (85)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (88)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (89)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (91)
<223> n equals a,t,g, or c

<400> 497
gtgaaacatc aataaagacc acttaatgca cgctttcaaa aaaaaaaaaa aaaaaaaaaa 60
aaaaaaaaaa aaaaaaaaaa aaannaanna nat 93

<210> 498
<211> 392
<212> DNA
<213> Homo sapiens

<220>
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<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (50)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (106)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (113)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (160)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (180)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (181)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (245)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (248)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (351)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (363)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (377)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<400> 498
cgggaccnaa ggaggagctg cgtggcggcg gtggcgacat ggcggacctn ccgaggcggg 60
tgacgcgccc cctgatgatg ggcctccagg ggagctcggg cctnanggcc tgnacggtcc 120
agaggaaaag ggccgggatc gtgaccggga gcgacggcgn acaccggagc gagcgcgagn 180
ncgccgggac cgggatcgtg accgtgaccg tgaccgcgag cacaaacggg gggagcgggg 240
cattnaancg gggcagggat gaagcccgaa gttgggggcg gtggccagga caacgggttg 300
gaaggtttgg gcaacgacag ccgagaattt tacntgaatt ttaaggcggc nacgttactt 360
gtnccggaaa ttggttnttt attgaagttn cc 392

<210> 499
<211> 262
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (23)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (60)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (76)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (78)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (114)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (160)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (209)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (212)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (218)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (219)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (226)
<223> n equals a,t,g, or c

<400> 499
ggtaagagca acgtgctttg ggngcagaga agagggagan agcagcatct tgcctggatn 60
agccagggga cacagnanag aagcccacct ggacacaaca ccanaaaggc ttcntattcg 120
ggtgtggagt cttttcagca acccggtcca gtactgggcn gatacagcca tccaccttac 180
agatgtgtct acgtgacgct ctgccattnc anctcggnna ctatangtaa ttctcaagaa 240
agccctcatt tttataacct gg 262

<210> 500
<211> 437
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (309)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (317)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (398)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (405)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (406)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (418)
<223> n equals a,t,g, or c

<400> 500
accacaaagc ccccctggag catcttcccg gctggcagga ccatgccatc tctgtggaga 60
aggtgctggg gagggaagtc cttccagtgc cacatggagt gaggccctgc ccatgctggg 120
gactttgggg aggaatttgg tattctggtg gccttgctca gctctcattg agatcttttc 180
ctatcagaat gttagtgaat atacttcgca gctctttgtt cagcaataag gaatattctt 240
tcaattcctg ctcttcaagc caatttacta cacccatttg tctttccaaa attcatccca 300
acggtatant tggtttnggt cctccttgga ttcaatctgt ttcctggtaa aattgaacct 360
gtccattgtg aatcctctta attncctcct cccaaaanaa ccagnncttg taaatttntg 420
gccaactcca ggggcca 437

<210> 501
<211> 180
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (162)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (165)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (166)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (174)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (177)
<223> n equals a,t,g, or c

<400> 501
gagaactagt ctcgagtttt tttttttttt tttttttgtt ttttggctct ttcaaaggta 60
atggcccatc gatgagcatt tttaacatac tccatagtct tttcctgtgg tgttaggtct 120
ttatttttat ttttttcctg ggggctgggt gggtttgggg gncanngggg gaantgncct 180

<210> 502
<211> 436
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (101)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (174)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (197)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (199)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (222)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (225)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (229)
<223> n equals a,t,g, or c

<220>
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<222> (262)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (266)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (276)
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<220>
<221> misc feature
<222> (287)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (290)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (297)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (327)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (328)
<223> n equals a,t,g, or c

<220>
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<222> (330)
<223> n equals a,t,g, or c

<220>
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<222> (336)
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<220>
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<220>
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<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (385)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (436)
<223> n equals a,t,g, or c

<400> 502
tacaaactgt cctttattca gagtgagact gcggaacatt aataatttat cacgcgggga 60
gtccccagaa gccctgtgcc cacgaacccc tgtgggcgga nggagagaag cggggactcc 120
gggagcttcc tgagagggcc gtgtcttggg agcaaggtga catatccagt ccangcacgc 180
ggaacatgac tcagaantng ggaaacaaaa aaccatcccc cnccngaang ggggggccca 240
ggcccctaaa aagcacaatg gnggcnggtg gaattngggt taaaatntcn gggttcnaaa 300
aagaccatat tttttttcc cagttcnntn gccccncctt ttnttgttaa ggggggggt 360
taanattccc ccctccccgg gaaanaaaan tacctttctt aggaagaagg gccccccccc 420
ccttcccgcc tttttn 436

<210> 503
<211> 418
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (50)
<223> n equals a,t,g, or c

<220>
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<222> (55)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (56)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (57)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (61)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (62)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (94)
<223> n equals a,t,g, or c

<220>
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<222> (97)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (106)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (109)
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<220>
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<222> (110)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (111)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (112)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (116)
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<220>
<221> misc feature
<222> (125)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (126)
<223> n equals a,t,g, or c

<220>
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<222> (127)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (130)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (179)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (210)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (212)
<223> n equals a,t,g, or c

<220>
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<220>
<221> misc feature
<222> (226)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (237)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (239)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (245)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (253)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (256)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (257)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (289)
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<220>
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<222> (337)
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<220>
<221> misc feature
<222> (350)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (351)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (367)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (375)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (379)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (404)
<223> n equals a,t,g, or c

<400> 503
gctcttttaa ataaatgagc aagtgtccta agctatgtca nccaaagatn gtccnnncca 60
nnctcaaatc cngtgactgg gatcactcaa cagnacngtg atgtangann nncaangagg 120
tgccnnnctn aactgaccaa atgctgcctt gtttggcccc taaatcaata aaatatgtna 180
aaatttgtat cccctgttgt ggcatttttn tnagataatc naagcnagaa aaatganang 240
gaatnctgga ccnggnnggg aaggaaaaga accctttctt gtcgctggna actgtgttgg 300
taaggaagtc caaatttgtg catatgaaat aagccgnaac cgctggaacn ncactcctat 360
gcagctnctc ttganccana aacaaggagc ttggtctaat gganatacac tgtgcttg 418

<210> 504
<211> 202
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (99)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (126)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (143)
<223> n equals a,t,g, or c

<220>
<221> misc feature

B4 (cont'd)

<222> (161)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (182)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (183)
<223> n equals a,t,g, or c

<400> 504
gctgggttta taccgtcgtg agacaagtta gttttaccct actgatgatg tgttgttgcc 60
atggtaatcc tgctcagtac gagaggaacc gcaggttcng acatttggtg tatgtgcttg 120
gctgangaac caatggggcg aanctaccat ctgtgggatt ntgactgaac gcctctaatt 180
cnnaatcccg cccatgcgga ac 202

<210> 505
<211> 568
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (258)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (342)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (393)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (395)
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<223> n equals a,t,g, or c

<220>
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<222> (511)
<223> n equals a,t,g, or c

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<222> (538)
<223> n equals a,t,g, or c

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<222> (561)
<223> n equals a,t,g, or c

<220>
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<222> (565)

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<400> 505
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tcagcatctg caatgggcca aacacacctc aaattggctg agttgagaaa gcagccccag 120
tagttccatt cttgcccagc actttctgca ttccaaacag catcctacct gggtttttta 180
tccacaaagg ttagcggcca catggttttt aaattatgaa gaaacacatt tgtcctctcc 240
ttttatccaa gcaggaanat cctatatccc tgatggttaa aaacaaatcc aggccacccct 300
gaatttgcta ccccaaaaaa gagatttggt taanctgttt cnccggtttg ttccctaagg 360
ccatatttta aaattaccac tctgggggtc ccntnaaaac cccngccggg gaccatcttg 420
cnntntggtt aaaacccccct gtttcaatct ctaaatttnc ccctaaggag ggggttggct 480
tnaaaatttg ggggaactta tcnccccttca ngttttttcc gggtaccccc cccttggngg 540
gggaaaccct ggctcgggga ntganaaa 568

<210> 506
<211> 187
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (99)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (140)
<223> n equals a,t,g, or c

<220>
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<222> (178)
<223> n equals a,t,g, or c

<400> 506
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taatttaagt aattgctgac tgcatagctc ttttccttna gaggctctcc attttaattc 120
aaaaagttag catatttatn aaccatgaaa tttgaaaacc agggcttttt tttttttngg 180
ggggttg 187

<210> 507
<211> 68
<212> DNA
<213> Homo sapiens

<220>

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<220>
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (64)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (65)
<223> n equals a,t,g, or c

<220>
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<222> (66)
<223> n equals a,t,g, or c

<400> 507
tacgagggtc attttttttt tttttttttt tttttttttt tttttttttt ttnncccccc 60
cccnnncc 68

<210> 508
<211> 366
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<220>
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<220>
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<222> (161)
<223> n equals a,t,g, or c

<220>
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<220>
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<222> (303)
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<222> (314)
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<220>
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<222> (332)
<223> n equals a,t,g, or c

<220>
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<222> (339)
<223> n equals a,t,g, or c

<220>
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<222> (348)
<223> n equals a,t,g, or c

<220>
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<222> (364)
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tctttgtttn aatcttgcaa tgtgctttcc ttgtngctgg gcggatgaat gtttactnaa 120
cgatgaaatt ttaacatcca aagggggata ggcacttggn ncccccattc tnccaaggcc 180
cgggggggcg gtttcccatg ggaatgtgaa aaggctggcc attattaagt ccctgtaaat 240
naatgtgaaa ccccaccggg gcaccccccg tcccccaaag ttttggttgt ttaaaaataa 300
gnnttccatg gggnagtttt aaaaacctgg tngccccgnt ttttttnaa ttaaaataag 360
ggtnag 366

<210> 509
<211> 496
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (75)
<223> n equals a,t,g, or c

<220>
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<222> (99)
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<220>
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<222> (111)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (146)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (201)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (242)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (282)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (320)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (346)
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<220>
<221> misc feature

<222> (353)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (374)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (413)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<220>
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<222> (486)
<223> n equals a,t,g, or c

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cngggtctga ttttntcact gaactccacc gaccaactnc cctaagcccc nagggcctcc 120
agggaccagg ttcgagaccc aaaccncnaa aatccaaaac ttctcttgaa aagttcaggg 180
accgtccagg ggagatgggg nggagatatg gagtgagtca cctgactcca gaagatgcca 240
gnttctctct ccagggtgct tagttggctt tgaccacccc tnactcccca gggagctctg 300
gggcacagct tcctgcacan ccctgtgccc aaccacacag ctgccntagc tgnaccccga 360
gaagtgctct tggntgaccc tntggtgtgt ggtgaggggt ttgtgttccc ttnctgtttc 420
agaccctcga ttttccgtaa tggtttgggn gagttgggga ggttcaagca gagtgtttta 480
ttattntcgg tttatg 496

<210> 510
<211> 363
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
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<222> (25)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (282)
<223> n equals a,t,g, or c

<220>
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<222> (339)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (352)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (354)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (361)
<223> n equals a,t,g, or c

<400> 510
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cgaagctacc atctgtggga ttatgactga acgcctctaa gtcagaatcc cgcccaggcg 120
gaacgatacg gcagcgccgc ggagcctcgg ttggcctcgg atagccggtc cccgcctgt 180
ccccgccggc gggccgcccc cccctccacg cgccccgcgc gcgcgggagg gcgcgtgccc 240
cgccgcgcgc cgggaccggg gtccggtgcg gagtgccctt cntcctggga aacggggccc 300
ggctggaaag gcggccgttt agaggatcca agcttacgna cgcgtgcatg cnangccata 360
nct 363

<210> 511
<211> 331
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (66)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (90)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (276)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (301)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (312)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (318)
<223> n equals a,t,g, or c

<220>
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<222> (330)
<223> n equals a,t,g, or c

<400> 511
naggaatang ccggnaaagc ttctacgcct gcaggtaccg gtccggaatt cccgggtcta 60
cccacntttc cgcataggtg ttcatactgn tacatgcaga acatttgtca ggctctctgt 120
cagctttcat gtacatatgg tatagaaacc atggagttag gcacttcctg gatttttttt 180
ttatgagaaa aatactgtat ttaaaatgta aaataaactt ttaaaaagca aaaaaaaaaa 240
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaanaaaa aaaaaaaaaa agaaaaacag 300
nttaaaaaac anaaaatnaa aaaaaaaaan a 331

<210> 512
<211> 754

<212> DNA
<213> Homo sapiens

<220>
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<222> (572)
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<220>
<221> misc feature
<222> (667)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (724)
<223> n equals a,t,g, or c

<220>
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<222> (748)
<223> n equals a,t,g, or c

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tcattttcaa aaaacaagca tgactcacca aaagttttaa gattttctgt gataatgttc 120
ttattgaggc ttacattata ttacagtttc ttgaatctaa aatgatgtac cctcttagga 180
tatatacatc atgcttcatt ggtctcaggg ggctgatttt tataaggaga gatttgctag 240
ttttcacaat atgtcctcta agttggcatg tatagctaaa caggctttca taaaaatata 300
caatttagtt aatgaaattt gggatatagt cttttatgat tgaaataatt ttgctaaata 360
gactgtctct gatttattag gtaatcacca ctcttatttt gttttacttc cttaatgtct 420
acatagaaag gaaatgagaa aaatccagag gttgtcattt gacttatgag tctgtttgac 480
ttcaggattt ggtacatgaa atttcactta atctttttga tatgtataaa acaaatattc 540
tgggtaatta tttttatcct tttggttttg antccttttt attcctatca tattgaaatt 600
ggtaagttaa ttttcctttg aaatattcct tatagccagg tctaaaattc aatgggccca 660
caaccgncaa ccgccaacaa caaccaaccc cactttacta tcatggctgg gtgcctccaa 720
tttnccttct gggaaccacc cagttaantt aaaa 754

<210> 513
<211> 245
<212> DNA
<213> Homo sapiens

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<222> (7)
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<220>
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<222> (67)

<223> n equals a,t,g, or c

<220>
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<222> (76)
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<222> (81)
<223> n equals a,t,g, or c

<220>
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<222> (131)
<223> n equals a,t,g, or c

<220>
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<222> (179)
<223> n equals a,t,g, or c

<220>
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<222> (207)
<223> n equals a,t,g, or c

<220>
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<222> (232)
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taaatgntcc tttcctttgt agactctggc aaaaggcttt aggaagataa aagtttgagg 60
agaacanaca ggaatnctga nttaagcaca gagttgaagt ttatacccga ttcacatgct 120
tttcaagaat ntcgcaatta ctaagaagca gataatggtg ttttttagaa acctaattna 180
ggtatattca accaaatact tttaaangta taaaataaat attatacaat anacttgtgt 240
agcag 245

<210> 514
<211> 393
<212> DNA
<213> Homo sapiens

<220>
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<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (60)
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<220>
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<222> (89)
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<222> (97)
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<222> (104)
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<220>
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<222> (124)
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<220>
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<222> (126)
<223> n equals a,t,g, or c

<220>
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<222> (141)
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<220>
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<222> (162)
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<220>
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<222> (174)
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<220>
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<222> (192)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (194)
<223> n equals a,t,g, or c

<220>
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<222> (196)
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<220>
<221> misc feature
<222> (234)
<223> n equals a,t,g, or c

<220>
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<220>
<221> misc feature
<222> (297)
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<220>
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<222> (302)
<223> n equals a,t,g, or c

<220>
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<222> (312)
<223> n equals a,t,g, or c

<220>
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<222> (317)
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<220>
<221> misc feature
<222> (319)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (327)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (333)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (341)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (359)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (362)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<400> 514
aattcggcac gagttttaat atgaaaganc ctcatgaatt aaatagttga tgcaattttn 60
aacgttaatt gatataaaaa aaaaaacanc aaaattnggc ttgnaaaact gacttttnca 120
ttangngggt tttgaaatct ngccccagac atactgtgtt gngagatact tagngggagg 180
gagtaggttt tnangnggtt gatggtggtg gggagggaag gcctcctgaa ttgngtttga 240
tgcagagctt tttagccatg angaatcttt cagtcatagt actaataatt aaatttncag 300
tntttaaaaa gncaagntnt ttgtccnttt tgnntttctg nactccctgg aaagttccnt 360
tnggcggtgg ggcccaaagc tnttggtttt cct 393

<210> 515
<211> 231
<212> DNA
<213> Homo sapiens

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<220>

<221> misc feature
<222> (114)
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<220>
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<222> (121)
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<222> (200)
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<220>
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<222> (206)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (208)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (223)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (230)
<223> n equals a,t,g, or c

<400> 515
ggacaaatgt taatcttttg tctccagaaa aagttgggct ttcccaagca gttctattac 60
ccggttcaca attccttcac ccaaaantca tctcatggta tacatggctc ctantccttt 120
ncattacctg atggtagaaa taaaataatt cactttaaaa aaaaaaaaaa aaaaaaaaaa 180
aaaaaaaaaa aaaaaagggn ggccgntnta gaggatccaa gtntacgtan g 231

<210> 516
<211> 82
<212> DNA
<213> Homo sapiens

<220>
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<222> (14)
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<220>

<221> misc feature
<222> (22)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (67)
<223> n equals a,t,g, or c

<400> 516
ggcacgtacg gcangagcga angaaggagt aaggtngtgg gatctcaccg tgggtccgat 60
tagcctnttc tctgccttac tt 82

<210> 517
<211> 237
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (173)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (223)
<223> n equals a,t,g, or c

<400> 517
aattcggcac gagcccacct ccacctgccc cactcaccac ctctgctagt tccagacacc 60
tccacgccca cctggtcctc tcccatcgcc cacaaaaggg ggggcacgag ggacgagctt 120
agctgagctg ggaggagcag ggtgagggtg ggcgacccag gattcccct ccncttccca 180
aataaagatg agggtactta aagttaaaaa aaaaaaaaaa aanaaaaaaa aaaaaaa 237

<210> 518
<211> 281
<212> DNA
<213> Homo sapiens

<220>
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<222> (35)
<223> n equals a,t,g, or c

<220>
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<222> (116)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (134)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (230)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (243)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (259)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (263)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (265)
<223> n equals a,t,g, or c

<400> 518
gctcacgccg gccggggccg cgaggcctgg tctgngcctc agggaggggc cccgggtcct 60
ctcagtcttt cccctccccc aacgatgtag cgtttttcgt tgtttgcttt aggttnttga 120
aacagccccg gcgncgcctc tattggctct cggccttggc aacggccgtc gtcatggtta 180
ctggccctaa cagccgatgg ccgaagccga cctgccaccg ggcggggtcn ctggttggcc 240
ggncccaggc gcgcggggnc gcngnagccg agcattcttt t 281

<210> 519
<211> 443
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (372)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (373)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (396)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (411)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (441)
<223> n equals a,t,g, or c

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tcggaggcca tctcgggcac aggcccaccc cgccccaccc ctccagaaca cggctcacgc 180
ttacctcaac catcctggct gcggcgtctg tctgaaccac gcgggggcct tgagggacgc 240
tttgtctgtc gtgatggggc aagggcacaa gtcctggatg ttgtgtgtat cgagaggcca 300
aaggctggtg gcaagtgcac ggggcacaag cggagtctgt cctgtgacgc gcaagtctta 360
aggtctggcc gnnggccggc tgggtctggg catttntggg tgcaccgcgg ngctttccag 420
accaacatgt aaccggcatg ntt 443

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tctgtgctg 129

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tacatctcca gtacattccg ttcttttttt ttttgggact ctgtctcaaa taaatncata 120
aaaattaaat gngganttca ctttgcagtt gctgctgtnc aacgnacatt actcaatctt 180
tatgtncggc attctatgct ctactgggga aatttgggta ggagtgangt atttngtata 240
catatctnca tttaataatg gcaatngctg ggtctatctt actattttan ctattggata 300
aatattttgt ttcccccagg tgctggggnt gcaggcgtgn ccccactgng gcccggccac 360
attcagttct tatccaaggg ataaccccng cnt 393

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<212> DNA
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tacatgtaat acanacttaa ctcaaaatgg atcatatatc tnactgtaaa angnaaagcn 120

ataaaactga aaacagacta tcttta 146

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<222> (342)
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ncntgccggg tgccgctgac gggcgtgcgc gcttgtgcgg accggaggtg ggggccgann 120
cagccaaggt tgcgggggcc gcagagccgg acgaagacgg agggcggagc ggcttcggga 180
ctgcggagac tacacaccga gcgagcgcct gggcccgaag gagcgatgct gtggttccag 240
ggcgccattc cggccgccat cgcgacggcc aaaaagancg gcgcgtcttc gttgtgttcg 300
tggcagtgat gatgaacant ctacacagnt ggcttcaagt tnggaa 346

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<211> 470
<212> DNA
<213> Homo sapiens

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cgagaagacc ctatggagct ttaatttatt aatgcaaaca gtacctaaca aacccacagg 120
tcctaaacta ccaaacctgc attaaaaatt tcggttgggg cgacctcgga gcagaaccca 180
gcctccganc antacatgct aanacttcac cagtcaaagc gaactactat actcgattga 240
tccaataact tgaccaacgg aacaagttac cctngggata acagcgcaat cctattctan 300
agtccatatc aacaataggg tttacgacct cgatnttgga tcatgacatc ccgatggtgc 360
agccgctatt aaaggttcgt ntgttcaaca attaaagtcc tacgtgatct gagtncanac 420
cggantnatc caagtcggtt tctatctact tcaaattcct ccctgttcga 470

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<212> DNA
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aaacantngn ngccngntta tagattagaa gaggtcaagg ataaagatgg naagccactc 120
ctgncaaaag agtctnaagg nacagcttcc acccatggag tggaagactt ccttctgggg 180
tggctttgtg tgtagggnct tctgctggtt ccacaaaatn gcttcatctg cttaaaattt 240
naaggatgct naaacttgct ggctggccca tctnctgaag tgggnttccc aaaacccca 299

<210> 527
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<212> DNA
<213> Homo sapiens

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tccnatttgt atttaagtta cctaatttaa gaaggtttta aaaatggaaa ttcagtatat 120
aatatttgtg nggttttttt ccacagtgaa aaatgaaatt atgcagaaaa tgttccccac 180
aacatgacag ngaaaggaat tctgggacac gtttttttccc agtcccatta ttttcacagg 240
gatcggctgg aatacagggt caaaggatct ctttgccaga atgtgccaaa ntngntgaaa 300
aaggtaactg tttatcnctg atn 323

<210> 528

<211> 220
<212> DNA
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aagtggaaca gcccggagcc tgtatgtgaa aggnccacgg gtgttntaag ctagggacac 120
ggangtccaa acttggaatc aaacggncgn actgttaaat tatatcttat naactnatta 180
aatgaaaaca ttttgctccg taaaaagaat ataaaaaagt 220

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<211> 285
<212> DNA
<213> Homo sapiens

<400> 529
ccaagaagaa gctttacata ttctgggctt tcaacctcca tttgaagata ttaggtttgg 60
tcctttcacg gggaatacaa cacttatgag gtggtttaga caaattaatg accacttcca 120
tgtaaaagga tgctcttatg ttctatataa gcctcatggg aagaataaaa cagcaggaga 180
aactgcttca ggggccctgt caaagttaac ccgtgggatt gaaagatgaa tcgctggctt 240
atatctatca ttgccaaaat cattattttt gtccaattgg cttcc 285

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<400> 530
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ctgtgatgag gacccaaag 79

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<212> DNA
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acacaaatga tggatttaga attggcaatg ntgcgtcaaa accatggttt atcatcatat 120
gactnaggag gagnggtttg aagttgatca gctccagggt ttgtgaaaat tcantccgca 180
atggtaactt tcaggtncct nggaactgca gctggaggag ngnctnctng gccctt 236

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<212> DNA
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tttttntgtg tgtnagtttt natagtatcc atattttaat nactgtttnt tacttccatg 120
aaattttaaa aatctgaagg gnaaatgttt tgtgaaacat ttattttttt aaaggaaaag 180
ntgaaaggca ggcctatttc atcacaggac cacacacatn tncncggnnt agggcatnca 240
nactcaatgg ctttntttgt gaaatttggg tgttttttna atttnttnct gntcaaatgg 300
atgtggccaa aaacctttta nctgggttgg cntgggaaat t 341

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<212> DNA
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<220>
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<400> 533
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ccatgggctg anacctgacg gtgaaagatg ctggcgggca acnaattcca ggtgtccctg 120
aagncagctg ccatgtgggt gtnaaagctg aaggcgcgag ntncacccag naagatcggg 180
gtgcacgctn tnttagccag gcgtttgg 208

<210> 534
<211> 252
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<222> (246)

<223> n equals a,t,g, or c

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<222> (247)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (250)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (251)
<223> n equals a,t,g, or c

<400> 534
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ttagaaagtt tcaacagggt gctgctggca acatgaaagg natgatggga attcaatgaa 120
tatgtgaaag gaaaatgccc ttgaatatga anctgaactg canttgaaat gacctgaatt 180
tgcctgagaa cctgcagcgt ttncccttcc tttttgccga aattgggcgg ggaaagtgtn 240
attttnnctn ng 252

<210> 535
<211> 380
<212> DNA
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<223> n equals a,t,g, or c

<220>
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<222> (213)
<223> n equals a,t,g, or c

<220>
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<222> (215)

<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<220>
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<222> (379)
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<400> 535
nnttcggcan nggggggttta aaactttgct gcttttttac ataaangact gtgcctttcc 60
tagagagtta agatgtaaat gtgttctcac atgtnaantt tgagagttca ggggtctatt 120
atggaatgat acacnttttt aatgaaccnt aaaatanttc actaagntgt ttgccttcca 180
nagtgtttac ccttaagcct taacntgtat ctncnttcag aaaaccgtta tnttgtgcaa 240
accatagtag gaaganaaac ctttatttgg gatataacac tactgtaagt tatgttacag 300
angctananc cancccnctg tgttananta nangagccaa aannancaan agaaaaaagg 360
ggaaaagaaa aactaatang 380

<210> 536
<211> 91
<212> DNA
<213> Homo sapiens

<220>
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<220>

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<220>
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<220>
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<222> (68)
<223> n equals a,t,g, or c

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cgcaggtntt ctgcgcgccc cgttcagcca t 91

<210> 537
<211> 316
<212> DNA
<213> Homo sapiens

<220>
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<220>
<221> misc feature
<222> (232)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (277)
<223> n equals a,t,g, or c

<220>
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<222> (288)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (290)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (314)
<223> n equals a,t,g, or c

<400> 537
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atttttaaac atctgataaa acttaagctt ctttttcaga tgtttaaatt ttatcatcct 120
tttttttctc atgaattctt aaaggattat gctttaatgc tgtnatctat cttattgttc 180
ttgaaaatac ctggcatttt ttggtatcat gttcaaccaa catcattatg anattaatta 240
gattcccatg gccataaaaa tggctttaaa agaatanata tatatttntn aagtagctga 300
gaagcaaatg ggcngt 316

<210> 538
<211> 374
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<223> n equals a,t,g, or c

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<220>

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<222> (306)
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<220>
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<220>
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<222> (352)
<223> n equals a,t,g, or c

<220>
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<222> (354)
<223> n equals a,t,g, or c

<400> 538
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tgatccccat cgctgtgggt ggtgccctgg cggggctggt cctcatcgtc ctcatcgcct 120
acctcgtcgg caggaagagg agtcacgcag gctaccagac tatctagcct ggtgcacgca 180
ggcacagcag ctgcaggggc ctctgttcct ttctctgggc ttagggtcct gtcgaaggga 240
gggcacactt tctggcaaac gtttctcaaa tntggttcat ccaatgtgaa gttccatctt 300
ggnaancatt tgactatgca caacagatta attancgaaa tggacggtgt tnantttggc 360
taaatgggtt aaat 374

<210> 539
<211> 109
<212> DNA
<213> Homo sapiens

<220>
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<222> (9)
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<220>
<221> misc feature
<222> (46)
<223> n equals a,t,g, or c

<220>
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<222> (47)

<223> n equals a,t,g, or c

<220>
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<222> (62)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (82)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (108)
<223> n equals a,t,g, or c

<400> 539
gtgggattnc tgtgcaggag ggtcgtggtc tggctgtggc ggaggnncat aagaaggtaa 60
cncgacctgg cgcggcagac anggctcgaa gacctcatct ttattaana 109

<210> 540
<211> 396
<212> DNA
<213> Homo sapiens

<220>
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<222> (268)
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<220>
<221> misc feature
<222> (340)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (353)
<223> n equals a,t,g, or c

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<222> (366)
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<220>
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<222> (390)
<223> n equals a,t,g, or c

<220>
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<222> (393)
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<400> 540
tctgaccttt tgggttttaa gcaggaggtg tcagaaaagt taccacaggg ataactggct 60
tgtggcggcc aagcgttcat agcgacgtcg ctttttgatc cttcgatgtc ggctcttcct 120
atcattgtga agcagaattc accaagcgtt ggattgttca cccactaata gggaacgtga 180
gctggggttt agaccgtcgt gagacaggtt agttttaccc tactgatgat gtgttgttgc 240
catggtaatc ctgctcagta cgagaggnac cgcagttcag acattggtgt atgtgctggg 300
ctgaggagcc aatggggcga aactacccat ctgtggggan tatgactgaa cgncttctaa 360
gtcagnatcc cgcccaagcg gaaacgatan ggnagc 396

<210> 541
<211> 429
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (353)
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<222> (382)
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<222> (414)
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<220>
<221> misc feature
<222> (418)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (419)
<223> n equals a,t,g, or c

<400> 541
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caagcgttca tagcgacgtc gctgtttgat ccttcgatgt cggctcttcc tatcattgtg 120
aagcagaatt caccaagcgt tggattgttc acccactaat agggaacgtg agctgggttt 180
agaccgtcgt gagacaggtt agttttaccc tactgatgat gtgttgttgc catggtaatc 240
ctgctcagta cgagaggaac cgcagttcag acatttggtg tatgtgcttg gctgaggagc 300
caatggggcg aacnaccatc tgtgggatta tgactgaacg cctctaagtc agnatcccgc 360
ccaggcggaa cgatacggcc ancgccgcgg agcctcggtt ggcctcggat agancggnnc 420
cccgcctgt 429

<210> 542
<211> 617
<212> DNA
<213> Homo sapiens

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<222> (18)
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<220>
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<220>
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<222> (49)
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<220>
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<222> (52)
<223> n equals a,t,g, or c

<220>
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<222> (552)
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<222> (588)
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<400> 542
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ccacgcgtcc gagtttccct caggatagct ggcgctctcg cagacccgac gcaccccgc 120
cacgcagttt tatccggtaa agcgaatgat tagaggtctt ggggccgaaa cgatctcaac 180
ctattctcaa actttaaatg ggtaagaagc ccggctcgct ggcgtggagc cgggcgtgga 240
atgcgagtgc ctagtgggcc acttttggta agcagaactg gcgctgcggg atgaaccgaa 300
cgccgggtta aggcgcccga tgccgacgct catcagaccc cagaaaaggt gttggttgat 360
atagacagca ggacggtggc catggaagtc ggaatccgct aaggagtgtg taacaactca 420
cctgccgaat caactagccc tgaaaatgga tggcgctgga gcgtcgggcc catacccggc 480
cgtcgccggc agtcgagagt ggacgggagc ggcgggggcg gcgcgcgcgc gcgccgtgtt 540
ggtgttcgcc gncttcccag tgggcaagcg ccccaacccc cttccttntt ggttcctctt 600
nccccaatng gnaacaa 617

<210> 543
<211> 302
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (135)
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<220>
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<222> (148)
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<222> (156)
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<221> misc feature
<222> (281)
<223> n equals a,t,g, or c

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<222> (282)
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<220>
<221> misc feature
<222> (293)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (295)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (299)
<223> n equals a,t,g, or c

<400> 543
acccacgcgt ccgaaatact taaaatgagg aataagaatg gagatgttac atctggtaga 60
tgtacattgc taccagatta tggatggact gatctgaaaa tcaacctcaa ctcaagggtg 120
gtcagctcaa tggnncacag agcacggnct tttggnttct ttgcagtact ttgaatttat 180
ttttctacct atatatgttt tatatgctgc tggtgctcca ttaaagtttt actctgtgtt 240
gcaaaaaaaa aaaaaaaaaa aaaaaaaaag gggggccccc nntaaggggc ccnantttng 300
ga 302

<210> 544
<211> 534
<212> DNA
<213> Homo sapiens

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<220>
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<222> (252)
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<220>
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<222> (281)
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<222> (283)
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<222> (290)
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<220>
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<222> (296)
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<222> (318)
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<220>
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<220>
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<222> (386)
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<220>
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<222> (393)
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<221> misc feature
<222> (419)
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<220>
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<222> (426)
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<221> misc feature
<222> (436)
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<222> (461)
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<220>
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<222> (493)
<223> n equals a,t,g, or c

<220>
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<222> (498)
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<400> 544
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ttctgcataa tgaattaact agaaataact ttgcaaggna gagccaaagc taagaccccc 120
gaaaccaaac gagctacctt nnagaacgct aaaagagcac acccgtctat gttngccaaa 180
tagtggaaaa aatttatagg ttgaaggcga acaaacctac cgacctggta atactggttt 240
gttccaaaat anatcttaat ttccactttt aattttgccc ncnaaacccn ctaatncccc 300
tttttaattt actgttnngn tcccaanaag gnaacncnct ttgggacnct tngaaaaacc 360
ttttttaaaa aaattttaaa tttntncccc ttntgggggc cctaaacccc ccccctttna 420
aaaggntttt tcaccncccc cccccccccg aaaccccccc nttttttttt cccccccccc 480
ctnggaccct ttnccccnaa aaaaattttt ttttttttta aaaacccccc cccc 534

<210> 545
<211> 355
<212> DNA
<213> Homo sapiens

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<220>
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<220>
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<222> (281)
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<222> (299)
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<222> (337)
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<222> (355)
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aactactctt caagtggtgg cncagtccca gcanggcagt ccgcctctcc ccctgctgag 120
actttaatct ccaccagccc ttaaagtgtc ggccgctctg tgactggant tatgctcttt 180
tgaaatgtca caaggccgcc tcccatctct gggggtattg ttacaaattc ttcctctccc 240
tgaaatngcc tttcctgctt tcctccgtgg gtaagttcna ncaaatttcc tctagcttnc 300
ctggaaggaa tcactccccc caaggaaacc tcccttncct tttcctgggg tgttn 355

<210> 546
<211> 269
<212> DNA
<213> Homo sapiens

<220>
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<221> misc feature
<222> (232)
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<222> (267)
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<220>
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<222> (268)
<223> n equals a,t,g, or c

<400> 546
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ggattcttct cactagttct aacaaaatct gtgatgttaa atgactgatg ctctcaattg 120
tgatccagag ttttaaataa atgaaatcaa ggtgggattt tgggaatata tcctgaantt 180
taacatcttg atgttccttc ttgtttgtta aaaaaaaaaa aaaaaactcg angggggccc 240
cggtacccaa tncccccctaa tagtgannc 269

<210> 547
<211> 82
<212> DNA

<213> Homo sapiens

<220>
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<220>
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<222> (40)
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<220>
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<222> (54)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (56)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (63)
<223> n equals a,t,g, or c

<400> 547
ggaaaacatg gaaaaggatc tggaaagtgg gcttgcanan gcttgggacg gaananoctg 60
atnccggccc tgatggtcac gg 82

<210> 548
<211> 362
<212> DNA
<213> Homo sapiens

<220>
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<222> (284)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (311)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (338)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (360)
<223> n equals a,t,g, or c

<400> 548
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gtatttagtc tccattgtct tgcattggga tttgagaaga aaatcagaga gggaagatct 120
ggtatttcct ggcctaaatt ccccttgggg aggacaggga gatgctgcag ttccaaaaga 180
gaaggtttct tccagagtca tctacctgag tcctgaagct ccctgtcctg aaagccacag 240
acaatatggt ccccaataac cgaatgcacc ttctgtgctt ccancttctt ccttgaaatt 300
caagggtctt nccgtttccc cattcccccc caggccantc caanttattc caaaccctgn 360
tt 362

<210> 549
<211> 448
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (159)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (239)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (251)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (259)
<223> n equals a,t,g, or c

<220>
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<222> (281)
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<220>
<221> misc feature

<222> (284)
<223> n equals a,t,g, or c

<220>
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<222> (299)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (301)
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<222> (319)
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<220>
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<220>
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<222> (374)
<223> n equals a,t,g, or c

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<222> (396)
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<222> (437)
<223> n equals a,t,g, or c

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<222> (446)
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tgaggtgggt ctacctcatc tctgaaaatt ctggaaggaa tggaggagtc tcaacatgtg 120
tttctgacac aagatccgtg gtttgtactc aaagcccana atccccaagt gcctgctttt 180
gatgatgtct acagaaaatg ctggctgact gaacacattt gcccaattcc aggtgtgcnc 240
agaaaaccga naatattcna aattcccaat ttttttctta ngancaagaa aaaaatgtng 300
ncctaaaagg ggttaattna aggggttagg ggttatgaaa ganсttgatt tggatctctt 360
tttattttaa tttnaatttc acttttgaca tccaanaaaa actttgttga aatacttctg 420

ttctcaatgt tttgganaaa aatcancc 448

<210> 550
<211> 502
<212> DNA
<213> Homo sapiens

<220>
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<222> (13)
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<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>
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<222> (153)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (158)
<223> n equals a,t,g, or c

<220>
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<222> (207)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (296)
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<220>
<221> misc feature
<222> (318)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (327)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (329)
<223> n equals a,t,g, or c

<220>
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<222> (342)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (381)
<223> n equals a,t,g, or c

<220>
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<222> (412)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (427)
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<220>
<221> misc feature
<222> (463)
<223> n equals a,t,g, or c

<220>
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<222> (493)
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<400> 550
aattcggcag agnaaaccat ttacncaaat aaagtatagg cgatagaaat tgaaacctgg 60
cgcaatagat atagtaccgc aaggagaaga tgaaaaatta taaccaagca taatatagca 120
aggacttaac ccctatacct tctggcataa tgnaattnaa ctaggaaatg aactttgcaa 180
gggggagcca aagcttaaga cccccgnaaa ccagacggag cttaccttaa ggaacagctt 240
aaaagaggca cacccgtctt atgtaggcaa aatagtgggg aaggtttttt aggttngagg 300
cggaccaaac cttaccgngg cctggtngnt agcttggttg tnccaggtta ggatctttta 360
gtttccaact ttaaattttg ncccacagga accctttttaa atccccttgt tnaattttaa 420
ccgtttngtc cccagggggg accagttttt tggccattgg ggnaaaacct tttggggggg 480
gttaaaaatt ttncccccct gg 502

<210> 551
<211> 119
<212> DNA
<213> Homo sapiens

<220>
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<222> (35)
<223> n equals a,t,g, or c

<220>
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<222> (57)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (98)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (107)
<223> n equals a,t,g, or c

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aaaaaggaaa ttaagagaag gtagaaattt aaatntttta atgaaaataa tgctttnaat 60
cattaaaaca ggatatgaat actccaatcc tttttaanat tatnacngtt ttcaaaatt 119

<210> 552
<211> 396
<212> DNA
<213> Homo sapiens

<220>
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<222> (209)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (357)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (370)
<223> n equals a,t,g, or c

<220>
<221> misc feature
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<220>

<221> misc feature
<222> (379)
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<220>
<221> misc feature
<222> (389)
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<400> 552
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aaccaagcat aatatagcaa ggactaaccc ctataccttc tgcataatga attaactaga 120
aataactttg caaggagagc caaagctaag acccccgaaa ccagacgagc tacctaagaa 180
acagctaaaa gagcacaccc gtctatgtng caaaatagtg ggaagattta taggttgagg 240
cgacaaacct accgagcctg gtgatagctg gttgtccaag ataaatctta gttcaacttt 300
aatttgccca cagaacctct aatccccttg ttaatttact gtttgtccaa agaagancac 360
tctttggacn ctnggaaanc cttgtaaana aattaa 396

<210> 553
<211> 253
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (96)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (100)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (203)
<223> n equals a,t,g, or c

<220>
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<222> (216)
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<220>
<221> misc feature
<222> (218)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (221)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (230)
<223> n equals a,t,g, or c

<400> 553
gaanatcgaa aggagaaaaa aagccgagat gtagtctcta agaaagagga acgtaagcgt 60
acaaaaaaga aaaggaacaa agccaagaaa ggacanagan gaaatgcttt gggaccagtc 120
tattcttgga ttttgaactt tcaaattggt tctcccaagt taaattgaaa aatagtgaga 180
cttggtttta tgaatcgtgt tcntacactt tcttantnat nggtcctttn ctcctaccaa 240
ggctattaac aat 253

<210> 554
<211> 431
<212> DNA
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<220>
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<222> (354)
<223> n equals a,t,g, or c

<220>
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<222> (383)
<223> n equals a,t,g, or c

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<222> (395)
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<220>
<221> misc feature

<222> (399)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (417)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (430)
<223> n equals a,t,g, or c

<400> 554
gcccaaaccc actccacctt actaccagac aaccttagcc aaaccattta cccaaataaa 60
gtataggcga tagaaattga aacctggcgc aatagatata gtaccgcaag ggaaagatga 120
aaaattataa ccaagcataa tatagcaagg actaacccct ataccttctg cataatgaat 180
taactagaaa taactttgca aggagagcca aagctaagac ccccgaaacc agacgagcta 240
cctaagaaca gctaaaagag cacacccgtc tatgttngca aaatagtggg aaaaatttat 300
aggttngaag cgacaaacct acgagcctgg tgatactggt tgttcccaga atanaatctt 360
agtttcactt ttaattttgg ccncagaacc ccctnaatnc ccttggttaa tttactnttt 420
agttccaaan a 431

<210> 555
<211> 489
<212> DNA
<213> Homo sapiens

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<222> (13)
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<220>
<221> misc feature
<222> (17)
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<220>
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<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (97)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (109)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (113)
<223> n equals a,t,g, or c

<220>
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<222> (127)
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<220>
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<222> (138)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (163)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (164)
<223> n equals a,t,g, or c

<220>
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<222> (179)
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<222> (184)
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<220>
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<222> (186)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (232)
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<220>
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<222> (246)
<223> n equals a,t,g, or c

<220>
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<220>
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<222> (322)
<223> n equals a,t,g, or c

<220>
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<222> (332)
<223> n equals a,t,g, or c

<220>
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<220>
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<222> (411)
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<220>
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<220>
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<222> (459)
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<222> (486)
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<222> (488)
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cttaccacat acatctctct cttcggatat gagctgnaaa ctccttatnt cancgctcta 120
actctgnagt cctaatnntt ctagttggac caaaaaaaat ccnnattgtt tgatctaang 180
agangnaatt taccaatnct gtatacgcat gtgtgtgtgt cgcttaaacg anctgtccgg 240
ttatanaaaa tcctgatcgt cataaatcat gtctanacat catgtaatga attgcacgat 300
ttaatattgt ccctattagc antcactaca anctatttct caaatntacn tatttctccg 360
taaacaanca ttcagtactc cntcggatct ctaaaaatcc tctatgatct ntncacatca 420
ctgataaaga ccaattcgta tatacatgac tgtccttanc acatattcac tatcagtaga 480
aaagcnanc 489

<210> 556
<211> 77
<212> DNA
<213> Homo sapiens

<220>
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<222> (13)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
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<222> (66)
<223> n equals a,t,g, or c

<220>
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<222> (75)
<223> n equals a,t,g, or c

<400> 556
ggaaaatatt atncagtaaa caatantgtg tgaactttta aaatggataa tagggcatgg 60
actgantgct gctanct 77

<210> 557
<211> 506
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
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<222> (228)
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<220>
<221> misc feature
<222> (270)
<223> n equals a,t,g, or c

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<222> (286)
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<222> (293)
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<223> n equals a,t,g, or c

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<222> (339)
<223> n equals a,t,g, or c

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<220>
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<222> (350)
<223> n equals a,t,g, or c

<220>
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<221> misc feature
<222> (402)
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<220>
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<222> (480)
<223> n equals a,t,g, or c

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<222> (482)
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<220>
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<222> (501)
<223> n equals a,t,g, or c

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gcgatagaaa ttgaaacctg gcgcaataga tatagtaccg cagggaaaga tgaaaaatta 120

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taaccaagca taatatagca aggactaacc cctatacctt ctgcataatg aattaactag 180
aaataacttt gcaaggagag ccaaagctaa gacccccgaa nccagacnag ctaccttaga 240
acagcttaaa gagcacaccc gtctatgttn caaaatagtg ggaaanattt atnngttgaa 300
gcgacaaacc taccgacctg gtgatactgg ttntccaana tanatcttan ttcactttaa 360
tttgccacng aacctcttaa tcccttgtta atttactgtt antccaaaaa agacactctt 420
tggacctagg aaaaaacctt tttaaaaaat taaaaattta cacccntttt nggctaaaan 480
cngcccccat tttaaaaaag nttcaa                                      506
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<210> 558
<211> 298
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (65)
<223> n equals a,t,g, or c

<220>
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<222> (150)
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<220>
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<222> (166)
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<220>
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<220>
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<222> (286)
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<220>
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<222> (291)

<223> n equals a,t,g, or c

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cacanaagaa agtcaaggct ggaatttcat tctcttatct aaatctctct gttctctctc 120
agggaatatt ttcagagaat aggtggaatn aagtgaggct gtgganaatg ttatctataa 180
taggatagac tttcttctgt gcacctgatg ggagggtaat gtctaatgta ttatcagtaa 240
cagtaaaaat anagcaaata ccngaaaant aaataagggg gggccnttct naaaaatc 298

<210> 559
<211> 295
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

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<220>
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<222> (76)
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<220>
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<222> (109)
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<222> (177)
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<222> (276)
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<220>
<221> misc feature
<222> (286)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (290)
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<400> 559
acaaagtgan cggtctggna agtcccggnc cggaaattcc cgggtcgacc ngaaccgtcc 60
ggataaatac tgtcantcca ttgatttatc tcctcctgtc ccccatctna aatacccatg 120
ctgctttnct gagtgttgat gggggttacc atcttgatcc actgttgctc ttagaangcc 180
canaanntct ttgggcattg ncaaggaaat cccggattat ctggaaaacc ctcnctttct 240
cttcacggct gtaccagaaa atccctaaga cagatnttgc ggtggncgan caata 295

<210> 560

<211> 371
<212> DNA
<213> Homo sapiens

<220>
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<222> (45)
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<222> (114)
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<220>
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<220>
<221> misc feature

<222> (341)
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<223> n equals a,t,g, or c

<220>
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<222> (360)
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<400> 560
gctnttttct gccgccaagc gcccggccgc gcgccggccg ncgcnacccg ctccggggac 60
agtgccaggt ggggagtttg actggggcgg tacacctgtc aaacggtaac gcangtgtcc 120
taaggcnagc tcagggagga cagaaacctc ccgtggagca naagggcaaa agctcgcttg 180
atcttgattt tcagtacgaa tacaagaccg tgaaagcggg gcctcacgat ccttctgacc 240
ttttgggttt taagcaggag gtgtnagaaa agttaccaca gggataactg gcttgtggng 300
gccaagcgta natagcgacg tcctttttga tccttcgatg ncggctcttn ctatcattgn 360
gaagcataat t 371

<210> 561
<211> 205
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (35)
<223> n equals a,t,g, or c

<220>
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<222> (67)
<223> n equals a,t,g, or c

<220>
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<222> (186)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (193)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (200)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (201)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (202)
<223> n equals a,t,g, or c

<400> 561
tnaaagcccc cgcgaggggc ccggggcggg gtccnttaaa cctgcgggcc gccggtgaaa 60
taccacnact ctgatcgttt tttcactgac ccggtgaggc gggggggcga gccccgaggg 120
gctctcgctt ctggcgccaa gcgcccggcc gcgcgccggc cgggcgcgac ccgctccggg 180
gacagngcca ggnggggagn nngac 205

<210> 562
<211> 580
<212> DNA
<213> Homo sapiens

<220>
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<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (23)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<222> (114)
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<220>
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<223> n equals a,t,g, or c

<220>
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<222> (383)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

<220>
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<222> (448)
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<220>
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<222> (480)
<223> n equals a,t,g, or c

<220>
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<222> (511)
<223> n equals a,t,g, or c

<220>
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<222> (515)
<223> n equals a,t,g, or c

<220>
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<222> (542)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (561)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (569)
<223> n equals a,t,g, or c

<400> 562
ttnngactat agttttagnt nanaccccctg caggtaccgg tccggaattc ccgggtcgac 60
ccacgcgtcc gcccattttt ccggttgata atgcaataga taatgggnaa gaanttcaag 120
ttgcattgcc natcttaatg gcagcttatg caatggcgga agcgtttatg tcaacaggag 180
ttggagcttc tcttatccta attgcattaa aagtaggaat tactgctaaa actgttgcag 240
ttataggagc tattgtcaca tcaatattat caatagcaac tgggacaagt tggggaacat 300
ttgcagcctg tgcacctatt tttttatggc taaatcatat agttggcgga aatattttat 360
ttgacaacaa gcagctattg cangangagc atgttttgga agataatata ggactatttc 420
agatactaca atagtaaagt ctggtatnca aaaaagtttg aaagttgtaa gaaagaattn 480
gacacccaag gtggtatggg caagcattag ntttnataat tcaaggaatt aataggcatt 540
tncttaatgg gtgggattta ncaatgggna tttaaccctt 580

<210> 563
<211> 198
<212> DNA
<213> Homo sapiens

<220>
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<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (39)
<223> n equals a,t,g, or c

<220>
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<222> (78)
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<220>
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<223> n equals a,t,g, or c

<220>
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<222> (130)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (132)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (164)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (173)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (197)
<223> n equals a,t,g, or c

<400> 563
gngngcccta ggcctcgcgc tgcccggccg gctcctcgng tcccactccc ggcgcacgcc 60
ctcccgcgag tcccgggncc ctcccgcgcc nctatactcg gcgcgcgcgc agcatggcgc 120
ccccgcaggn cntcacgttc gggcttctga ttgccgcggc gacngcgact ttngccgcag 180
ctcaggaaga atggagna 198

<210> 564
<211> 176
<212> DNA
<213> Homo sapiens

<220>
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<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (22)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (70)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (121)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (133)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (139)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (144)
<223> n equals a,t,g, or c

<400> 564
caactgnagc tcattctgtt anagntcctc attcanctgg tcactgtgga cagagggtgt 60
tggcctgctn ccttctaagt attcttaaag ccatggattt ttgnggacca ttttcttctg 120
ntcttccttg agntatttnc tttntttgct atcttgggac tcttctttgt gcttga 176

<210> 565
<211> 264
<212> DNA
<213> Homo sapiens

<220>
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<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (23)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>
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<222> (47)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (139)
<223> n equals a,t,g, or c

<220>
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<222> (246)
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<220>
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<222> (253)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (254)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (255)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (257)
<223> n equals a,t,g, or c

<400> 565
gcangtattc tacctaaatc ttncaatttn ctttaaatgg taagagnttc taaaacagac 60
aataatttaa caagctcagc tctgctttat ctgagtttag tggtcctaat atatatgtag 120
agaaagatgg tggggttgnt cacctctgta cagaccatct gtatgttagg tgacattgat 180
tatgggttat aatcagggaa actaattgga tttagtgaca aaaataaaaa gttttttttt 240
tatganaaaa aannnanggg ggac 264

<210> 566
<211> 411
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (96)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (101)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (110)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (142)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (178)
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<220>
<221> misc feature
<222> (206)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (291)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (295)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (335)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (385)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (387)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (393)
<223> n equals a,t,g, or c

<400> 566
nggacattga agccaaacca agccactatc agctggtgag tggaagcagc acggaggact 60
cgctccatgt tcatgctcag atggcagaga atgaanaaga nggtagtggn ggcggaggca 120
gtgaagagga tcccccctgc anacaccaaa gctgtgaaca gaaagactgc ctggccanca 180
aaccttggga catcagcctg gcccancctg aaagcatccg cagtgaccta gagagttctt 240
gatgcacagt ctgacgatgt gccagacatc accttcagaa tgaaatgtgg nttcncccgc 300
tcccatactg cagcctgccc ctcgaccccc agagnccaag gtgcaccgag cccaagtgcc 360
catatgaacc tctctgccct anccnangga canactgtct tgaagccaga a 411

<210> 567
<211> 208
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (181)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (194)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (201)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (202)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (206)
<223> n equals a,t,g, or c

<400> 567
ggggaaaggg acctttccga aaaacatntt ttggggaaat aaaaatgtgg actgtgaaaa 60
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 120
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 180
ngggggggcct tttnaaaaaa nnaaantt 208

<210> 568
<211> 322
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (191)
<223> n equals a,t,g, or c

<220>
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<222> (204)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (291)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (300)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (306)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (320)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (321)
<223> n equals a,t,g, or c

<400> 568
ncttggtcta ncctggctgc tcagaaagag cagtcaggac ttgagggaag catcaaattc 60
tatacccata aactgcagtt ggaagtcagc tttttgaaat gtccagcctt tgcccaattg 120
tttcagatca tctcattcct caggctttgg caggtatcct gccctccatc ttattccagt 180
gtgttcacct natcaaggca gcanagtgga tgaaggagta agtctgccct ttgccatact 240
gaacagctgt ggacccgat tggtgagggc tctgcatatg cctgtatgaa ngagatacan 300
gtgtgngtgc acatgccggn nt 322

<210> 569
<211> 594
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (285)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (487)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (499)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (541)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (575)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (588)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (591)
<223> n equals a,t,g, or c

<400> 569
gggaacccga tcctaattca gagaatattg ctgcaatctc tcagtcttca gtgggttcag 60
acttgtttgt atttaaacct agtgagccaa ggccattgta tattcaaaag ggtatctcca 120
gagagaaagt ccagtgggga gtgtttgttc cacgagatgt ccctgaatcc ttcacctcag 180
aagcttacca gtggctaaat agatcccagt tttacttcct aacaaaatca cagagtttat 240
tgacattcag tacaaagtct ccagaagaaa aactcacacc aacanagcaa acagctgcta 300
gcagaagaaa gtcttcccac aaccccattt tatttcatat tgggaaaaca caggcaacag 360
caggatgaaa aactaaacga aactttagag aatgagctgg tacaactacc cttaacagaa 420
aacatacccg caattagtga gcttcttcac actccaccca tgtcctgcca tctgctgctt 480
tcctgtnctc catgtttgna aattcattgc tgctgtctaa aggagactaa gaagtgctaa 540
ngaaattcct gaaaaatgta gatatgggaa gaagnaaaac ggaaagtnaa natt 594

<210> 570
<211> 310
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (274)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (286)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (288)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (290)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (305)
<223> n equals a,t,g, or c

<400> 570
gcggacgcgt gggaaataat tgcattaaaa tacaaaaggt gatagggaag aattaaaaga 60
tttgcagtat tgtacacaaa agctaataat tttgtgtact ttttatttat tttggaggtt 120
ttatatgatc ttcaattgag tattaaataa tttgcctaga ttaagcctaa aatgatgacc 180
agctaattaa agaagatatt ttgaatctgg ttctgagcta aagttgagta aattcttagc 240
taagaaaaaa ttggaaatcc atcatctata ttancaacag attctnanan taaattggta 300
acttntatga 310

<210> 571
<211> 109
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (46)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (64)
<223> n equals a,t,g, or c

<220>
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<222> (94)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (97)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (108)
<223> n equals a,t,g, or c

<400> 571
gggcggttgc ggttagtgga ccgggaccgg taggggtgct gttganatta tggttgaccc 60

ctanccccgg taccctgaat gatagatcga gganganttta actatagna 109

<210> 572
<211> 429
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (295)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (322)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (374)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (392)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (399)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (419)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (420)
<223> n equals a,t,g, or c

<400> 572
gtgtatttta caattttttt aaaggaaaat ttaaaatatg aaatgtttgt tttgtcttaa 60
cagggtatcc cttctccctc ccttgtcagc cttccttcct tctttgaaag gagaagtcat 120
acgttaagta gatctacaac tcatttgata tgaagcgtta ccaaaatctt aaattataga 180
aatgtataga cacctcatac tcaaataaga aactgactta aatggtactt gtaattagca 240
cttggtgaaa gctggaagga agataaataa cactaaacta tgctatttga ttttncttct 300
tgaaagagta aggtttacct gntacatttt caagttaatt catgtaaaaa atgatagtga 360
ttttgatgta attnatctct tgatcgaatc tngcattcna aaggccaata atttaaagnn 420
ggctatcaa 429

<210> 573
<211> 202
<212> DNA
<213> Homo sapiens

<220>
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<222> (33)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (45)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (152)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (158)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (173)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (189)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (194)
<223> n equals a,t,g, or c

<400> 573
gggctggggc tgaccgagga ggtggagggt ggnagaggct ggggntgata aatctattga 60
ttgattgtga tagtaaaaa aaaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa 120
aaaaaaaaaa aaaaaaaaa aaaaaaaaaa anaaaaanaa aaaaaaaaaa aanaaaaaaa 180
aaaaaaaana aatntaatat gc 202

<210> 574
<211> 229
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (53)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (163)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (172)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (191)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (220)
<223> n equals a,t,g, or c

<400> 574
gcccacgcgt ccgtctagat cgcgagcggn cgcccttttt tttttttttt canaagagct 60
acattgtgtc antggacatt tttaaaaact gtgattttta ataatgtcca atgactgcaa 120
gtcggcctgg attttcactt gcaaaggnta cagctgcatt gtnaggtctc cnagccctgc 180
agagagctcc ntccactggt tagcagtgtg ttgtgttttn cattcattt 229

<210> 575
<211> 260
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (196)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (215)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (217)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (250)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (257)
<223> n equals a,t,g, or c

<400> 575
gaaaagctta aagaaggttt tactgatcca gatgttgtcc agagacttcg agccttgagg 60
gttcttggtg ctgatgttgg tgaaggtgtg cgcggggatc agtaaaagct taaagaaggt 120
tttcacaggt cactgggctg tggtgagaga aggcctcacg aacccttgga ttccggataa 180
ctggtcttgg ggcggngtgg cttctgaaca ctgcnantgc taccgagttc tacactgaaa 240
aggactggan caagaangac 260

<210> 576
<211> 263
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (208)
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<220>
<221> misc feature
<222> (212)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (233)

<223> n equals a,t,g, or c

<220>
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<222> (251)
<223> n equals a,t,g, or c

<220>
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<222> (255)
<223> n equals a,t,g, or c

<400> 576
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cagcagatag cagtgtacag aaagcaaaaa aggaactgta tgtgaggcac ttgtttctgt 120
taatatccat attcctgtta acacacaccc tttctcatgt aaaaagaaaa ataaataaat 180
ggtctgaact ttgaaaactt tgtgctgnta ancatagatt ttggagacaa atnaatagat 240
gctatgctgt ntcantttca tag 263

<210> 577
<211> 366
<212> DNA
<213> Homo sapiens

<220>
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<222> (361)
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<222> (364)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (365)
<223> n equals a,t,g, or c

<220>
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<222> (366)
<223> n equals a,t,g, or c

<400> 577
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aatatacatc tgtagttatt ctacattttc ttgaaatttg ggaggttaat accaagtatt 120
catttcatga tgtaaagaaa ctgaacagtg aagtggcttg attgcttaaa ctattgactt 180
ggtaagtcta ctgtatataa catctaatat atatattaca ggccaaatga actaaacatt 240
gccttgctat attcaccaaa aggacttaat tcttgttttt ttcccagttt tatatanagg 300
aaacactatg ataggatttc ctaaagtatt tgtggacagt taaatgctaa ttatatacat 360
ntgnnn 366

<210> 578
<211> 595
<212> DNA
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<222> (5)
<223> n equals a,t,g, or c

<220>
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<222> (14)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<222> (572)
<223> n equals a,t,g, or c

<220>
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<222> (576)
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<400> 578
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aaggaccagg gaggtgagta ctgagggcca gggaagagga gtaggggtgt ctcagggtga 120
tctctggccc accgccttgg ccccttctcc caggtctnac ccaggcacag tacattgact 180
gcttccagaa gatcaagtac agcttcaacc tnctggtagg tggctcccca caagttcacc 240
aggcctctcc tcttcccctt cctccccagt aatcctctgc tgtctggact caaccatccc 300
aagccttttt cttcttcatc tactccccct agaacctccc cttccctctt gggacttttg 360
ggaagtgcca gccttncagc caaggcataa aacaattatg gtgacctggt gaanatggng 420
tggtgtgaag ggtggtgaca ggcattgctc tttgtcccca agggaaaggc tggcccacct 480
ggnttgaagg agacaagtgc cccctgagct cgtacacatt cctctttaag tcccttgaac 540
tttcgtgaag ttaagggacg acannggtgn tnaaanacgg acaggcttga agtca      595
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<210> 579
<211> 132
<212> DNA
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<223> n equals a,t,g, or c

<220>
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<222> (17)
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<220>
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<222> (64)
<223> n equals a,t,g, or c

<220>
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<222> (77)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (79)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (110)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (115)
<223> n equals a,t,g, or c

<400> 579
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attnttcagg gttgganana tgaactaata ctggtgaaaa tttacctaan acctnggtta 120
tcaaaaacat ct 132

<210> 580
<211> 558
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
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<222> (14)
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<222> (269)
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<220>
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<222> (353)
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<222> (370)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (374)
<223> n equals a,t,g, or c

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<222> (410)
<223> n equals a,t,g, or c

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<222> (411)
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<220>
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<222> (553)
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actagtggat ccaaagaatt cggcacgagg ccgcgttgac cactggcgtc tcgctggtgg 120
tcttcgagac cggcgttggt tgaaaatcgc ccccggcttt ggccgtggcc gcgggtgaga 180
ttcggcgccc agagcccccg ggggcctcag ctcaccgcgc gctgccccat gtgcgncggt 240
gaaacccagg ccccgacagg cgctgccgnc ttcccccccg ggtgcggttc gttcgcgagg 300
tgttggcccc tgattccttg accccgattg cagaccctta accttgttct ttnttccgca 360
gacaatggtn cttncccacg gctgtacaac cgacggtcgg ccaaggaccn nggggttttg 420
gggggaantt tggtttttcc caaggttttt caaattaaag ttgtttttgt tttaaaaaaa 480
aaaaaaaaaa aaaaattggg ggggtanttt ttgggggggg cccgggggnc ccatggtttt 540
ttncaanccg ggnggggt 558

<210> 581
<211> 120
<212> DNA
<213> Homo sapiens

<220>
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<222> (62)
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<220>
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<222> (65)
<223> n equals a,t,g, or c

<220>
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<222> (70)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (99)
<223> n equals a,t,g, or c

<220>
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<222> (103)
<223> n equals a,t,g, or c

<400> 581
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tnccnttggn ctaattcgca ctttcctcac gaggaaatna aantagggca aaaaccaaac 120

<210> 582
<211> 260
<212> DNA
<213> Homo sapiens

<220>
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<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (211)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (240)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (245)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (259)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (260)
<223> n equals a,t,g, or c

<400> 582
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actgtctgta ttattattca cctataatta gtcattatga atgctttaaa gctgtacttg 120
catttcaaag cttattaaga tataaatgga gattttaaag tagaaataaa tatgtattcc 180
atgtttttaa aaaaaaaaaa aaaaaaaaaa nccccggggg gggccccggt ccccatttgn 240
cccantgggg ggccgtttnn 260

<210> 583
<211> 469
<212> DNA
<213> Homo sapiens

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<222> (162)
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<220>
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<222> (423)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (460)
<223> n equals a,t,g, or c

<400> 583
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cctgcgggcc gccggtgaaa taccactact ctgatcgttt tttcactgac ccggtgaggc 120
gggggggcga gccccgaggg gctctcgctt ctggcgccaa gngcccggcc gcgcgccggc 180
cgggcgcgac ccgctccggg gacagtgcca ggtggggagt ttgactgggg cggtacacct 240
gtcaaacggt aacgcaggtg tcctaaggcg agctcaggga ggacagaaac ctcccgtgga 300
gcagaagggc aaaagctcgc ttgatcttga ttttcagtac gaatacagac cgtgaaagcg 360
gggcctcacg atccttctga ccttttgggt tttaagcagg aggtgtcaga aaagttacca 420
canggataac tggcttgtgg cggccaaacg ttatagcgan gtcgctttt 469

<210> 584
<211> 361
<212> DNA
<213> Homo sapiens

<220>
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<222> (253)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (265)
<223> n equals a,t,g, or c

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gaaccgcagt tcagacattt ggtgtatgtg cttggctgag gagccaatgg ggcgaactac 120
catctgtggg attatgactg aacgcctcta agtcagaatc ccgcccaggc ggaacgatac 180
ggcagcgccg cggagcctcg gttggcctcg gatagccggt cccccgcctg tccccgccgg 240
cgggccgccc ccncctccac gcgcnccgcg cgcgcgggag ggcgcgtgcc ccgccgcgcg 300
ccgggaccgg ggtccggtgc ggagtgccct tcgtcctggg aaacggggcg cggccggaaa 360
g 361

<210> 585
<211> 482
<212> DNA
<213> Homo sapiens

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<220>
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<222> (165)
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<222> (169)
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<220>
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<222> (176)
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<220>
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<222> (207)
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<220>
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<222> (224)
<223> n equals a,t,g, or c

<220>
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<222> (236)
<223> n equals a,t,g, or c

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<222> (275)
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<220>
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<222> (319)
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<220>
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<220>
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<222> (426)
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<220>
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<222> (441)

<223> n equals a,t,g, or c

<220>
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<222> (445)
<223> n equals a,t,g, or c

<220>
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<222> (450)
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<400> 585
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gcgacctcgg agcagaaccc aacctccgag cagtacatgc taagacttca ccagtcaaag 120
cgaactacta tactcaattg atccaatnac ttgaccaacg gaacnagtna ccctanggat 180
aacagcgcaa tcctattcta tantccntat caacaatagg gttnacgacc tcgatnttgg 240
atcaggacat cccgatggtg cagccgctat aaaangttcg tttgttcaac cattaaagtc 300
ctacgtgatc tgaattcana ccggagtaat ccaggtcggt ttctatctac ttcaaattcc 360
tcnctgtacn acaggacatn aagatataag gcctacttct caaancgcct tcccccgtaa 420
atgatntcat ctcaacttaa ntatnatacn cacaccctcc caataaaagg gtctgttggg 480
tt 482

<210> 586
<211> 492
<212> DNA
<213> Homo sapiens

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<220>
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<222> (11)
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<220>
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<222> (15)
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<220>
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<222> (463)
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<222> (480)
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<220>
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<222> (491)
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<400> 586
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cgcgtccggt cctttcccnt tccccccccc cacgcctcct cccctcctcc cgcccacgcc 120
ccgctccccg cccccggagc cccgcggacg ctacgccgcg acgagtagga gggccgctgc 180
ggtgagcctt gaagcctagg gcgcgggccc gggtggagcc gccgcaggtg cagatcttgg 240
tggtagtagc aaatattcaa acgagaactt tgaaggccga agtggagaag ggttccatgt 300
gaacagcagt tgaacatggg tcagtcggtc ctgagagatg ggcgagcgcc gttccgaagg 360
gacgggcgat ggcctccgtt gccctcggcc gatcgaaagg gagtcgggtt cagatccccg 420
aatccggagt ggcggagatg gcgccgngag gcgtcagngc ggnaacgcga ccgatcccgn 480
agaagcccgg ng 492

<210> 587
<211> 248
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<222> (205)
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<220>
<221> misc feature
<222> (210)
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<220>
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<222> (211)
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<222> (220)
<223> n equals a,t,g, or c

<220>
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<222> (242)
<223> n equals a,t,g, or c

<400> 587
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tatgnacaac acatttacag ttctgtaatg caaggatgca gtttaaaaat gtgaagtagt 120
gnanggtttt tgaaaataag ctttaaaata tagggatctt gaaaggcccc cgggggtact 180
attttataac ttagaataaa tgggnaatcn naactgtgtn tttggtaaat taatttttta 240
antatttt 248

<210> 588
<211> 653
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (2)
<223> n equals a,t,g, or c

<220>
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<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
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<223> n equals a,t,g, or c

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<220>
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<222> (510)
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<222> (544)
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<222> (575)
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<220>
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<222> (578)
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<220>
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<222> (604)
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<222> (626)

<223> n equals a,t,g, or c

<220>
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<222> (653)
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<400> 588
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gaattcccgg gtcgacccac gcgtccgcgg acgcgtgggg actgcttaga aatatagctg 120
aagtgatcac cacagccata aaattgttta agaaagattt atataatgtt tacaaatctg 180
gaatcaagga ttttagctga aatcctttaa gagatattag agcaagtatt taattcaggt 240
atttcaagt tttaaaactt aacctgttta cctactaaaa ataaaatagc tagttttttt 300
ctgcatataa aagttcattg aaatgatatg cccttatttg caatactttt cccataaagt 360
tttaagtgtg aaagaattgt aatttactag atatgtttgg tatgggatat tttgttaggc 420
aagttttctt ttttcttctt aaattgcaat aggcttccaa aaagagtata attgnttcag 480
aacaaattaa ctcttggcat tatacgtctn ccttttttctt tacagtatta gtaaaatgaa 540
aaantggaca ctttctgatt taacttcact aatgnaanta ctctctcaag gaagctttta 600
aaanttaaat taccatcaca caaccntttt atagtaaggc aacatttggt ttn 653

<210> 589
<211> 625
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<220>
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<222> (375)
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<222> (398)
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<220>

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<222> (522)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (525)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (560)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (562)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (563)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (603)
<223> n equals a,t,g, or c

<220>
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<222> (618)
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atacagaccg tgaaagcggg gcctcacgat ccttctgacc ttttgggttt taagcaggag 120
gtgtcagaaa agttaccaca gggataactg gcttgcggcg gccaagcgtt catagcgacg 180
tcgctttttg atccttcgat gtcggctctt cctatcattg tgaagcagaa ttcaccaagc 240
gttggattgt tcacccacac gagccctgtg cttttggtgt aaataatgta caatttgtgg 300
atgtcattga atctagagga ctttcccctt tttatatttg tattaacttt aacttattaa 360
aaanaaaaaa agaanaagaa aaacaattta taaaaaanan aaaaagcaac caaccccaac 420
aacaaaaaag aatggtttgg tattggagaa gggatggtca gttaagcctg ctggcacacg 480
acggaatgga tctgggcccg gggaccactt tcatactacg nnctnatctt tggataccca 540
gggaggggca accgtttcgn tnngggctgt acccagaagg tggaacggag tttggacaga 600
ctntccatta ggcgtggntc tttat 625

<210> 590
<211> 365
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (71)
<223> n equals a,t,g, or c

<220>
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<220>
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aagaacctct natccttgca tgccaggcac tctttcaatc acttcagtga ccatttttcc 120
aaaattctga aacatccaca cttagggttt tctttgaatt tgggggtgcc ctccccncac 180
ccggcagcct tctgtgtcag ggggntacgg tcttgatata gacaccattt tttggaccta 240
ggggcagttt tgggattcta gctncagggg tacctgggtc ttaagggcaa ggtttgggan 300
ccggnacttt ttgcaaaacg tgggggcagt ttcaatttg nccctnaang aggccctaga 360
cggga 365

<210> 591
<211> 65
<212> DNA
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<222> (55)
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<220>
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<222> (57)
<223> n equals a,t,g, or c

<400> 591
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aaacc 65

<210> 592
<211> 269
<212> DNA
<213> Homo sapiens

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<222> (96)
<223> n equals a,t,g, or c

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<220>
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<220>
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<220>
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<222> (152)
<223> n equals a,t,g, or c

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<220>
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<222> (212)
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<222> (234)
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<220>
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<222> (252)
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<222> (256)
<223> n equals a,t,g, or c

<220>
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<222> (267)
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gtacaccgca atcatgtcta taatgtccta taacgnaggg gccgtaatgg ccatgaaagg 120
ggnaagnanc tntntggncc atcgctgcag anaggcgctt ngggaatcca ggcccagaat 180
ggtgaaccac gggacttnca gaaagatctt tncccatggg ntgaaccggt tgtnaatggg 240
tttgggccgg gnttgncaat taaggtnca 269

<210> 593
<211> 307
<212> DNA
<213> Homo sapiens

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<222> (8)

<223> n equals a,t,g, or c

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<221> misc feature
<222> (160)
<223> n equals a,t,g, or c

<220>
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<222> (172)
<223> n equals a,t,g, or c

<220>
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<222> (267)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (268)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (278)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (282)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (302)
<223> n equals a,t,g, or c

<400> 593
ggcagagnag cattctctaa ctctacccca ccctacaaaa tgcatatgga ggtaggctga 60
aaagaatgta atttttattt tctgaaatac agatttgagc tatcagacca acaaaccttc 120
cccctggaaa agtgagcagc aacgtaaaaa cgtatgtgan agcctctctt gnaatttcta 180
gttagcaatc ttaaggctct ttaaggtttt ctccaatatt aaaaaatatc accaaagaag 240
tcctgctatg ttaaaaacaa acaacannaa acaaacanca gnaaaaaatt taaaaaaaaa 300
ancgggg 307

<210> 594
<211> 128
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (48)
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<220>
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<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (94)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (123)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (124)
<223> n equals a,t,g, or c

<400> 594
tatccacact gtcaaacagg ttggtgtggg ttcattggca ttctttgnaa tactgcttaa 60
ttgctgatac cntatgaatg aaacatgggc tgtnattact gcaatcactg tgcctatcgg 120
canntaat 128

<210> 595
<211> 598
<212> DNA
<213> Homo sapiens

<220>
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<222> (214)
<223> n equals a,t,g, or c

<220>
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<222> (234)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (236)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (252)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (279)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (303)
<223> n equals a,t,g, or c

<220>
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<222> (306)
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<222> (328)
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<220>
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<222> (361)
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<220>
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<222> (367)
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<220>
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<222> (384)
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<220>
<221> misc feature
<222> (391)
<223> n equals a,t,g, or c

<220>
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<222> (407)
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<221> misc feature
<222> (426)

<223> n equals a,t,g, or c

<220>
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<222> (552)
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<220>
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<222> (560)
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<220>
<221> misc feature
<222> (562)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (591)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (593)
<223> n equals a,t,g, or c

<400> 595
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aacacagttt agtgctttac atgctgtgct ctttgaagag atttcaacaa gaatattgta 120
tgttaaagca tcagagatgg taatctacag ctcacctctg aaggcaaata taagctggga 180
aaaaagtttt gatgaaattc ttgaagttca tggngatcag tgcaattgac cttntncctc 240
actcctgcca gntgaaaatg gatttttaaa ttatactgna gctgatgaaa ctcctgattt 300
tgnagntaat ttattaagtc tgggatgnag aacttcaaga agtaagagct aagttctaag 360
ntcatgnttg gaaattaata cttnatttgg ngctgggcta ttttganttt gggggggaat 420
cagcantatt cttcagaagg ggacctggtt tcttcaaggg aaagaaacac tcttattcca 480
aactacagaa taatggggta aacatgctaa ataggtctat aaggaaacca aatactggat 540
tatctcggag gntattggtn anaagggcct tgggtaaaaa taagggtaaa nanaaagg 598

<210> 596
<211> 465
<212> DNA
<213> Homo sapiens

<220>
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<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (423)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (438)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (465)
<223> n equals a,t,g, or c

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atttgtggct gtggattttt ttaactgcta gtagtggaat actggaaaag cttcatttct 120
gaagatgaat tttattttta aaaaatacat gcacactcaa aacttttagc tttgatcaca 180
agtggacaaa tttctgaaac caaaggcaac taagttgctg tgttagctct tgctggattt 240
tgagcctagg tcctactgtc tgccagtact catgtgagtt gtatgtgccc ccagtgctac 300
atacgcaggt atgcgtaagt gtgtatgctt gttttaaaca aacactcaac gtacatatgt 360
acataatcta cacatattta tatcacatat ctagctttat tactatagac tatacgaatt 420
ggnggtaaca tgaaatgnta ccttttacag actgttttta aaaan 465

<210> 597
<211> 320
<212> DNA
<213> Homo sapiens

<220>
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<222> (45)
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<220>
<221> misc feature
<222> (98)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (105)
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<220>
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<222> (123)

<223> n equals a,t,g, or c

<220>
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<222> (132)
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<220>
<221> misc feature
<222> (147)
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<220>
<221> misc feature
<222> (159)
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<220>
<221> misc feature
<222> (175)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (187)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (236)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (240)
<223> n equals a,t,g, or c

<220>
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<222> (259)
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<220>
<221> misc feature
<222> (313)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (319)
<223> n equals a,t,g, or c

<400> 597
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ccaaaaagga ccaactggct tctgtgcact agcctgtnaa ttannttgct tagtatggtt 120
ctnagatctt gnacagtata tttaaanctg taaatatgnt tgtgccttaa aaggngagaa 180
gaaagtntag atagttaaaa gactgcagct gctggaagtt ctgagccggg caagtngtgn 240
ggggctgttg ggacacttnc ttgtggggcc cggggtaatc agggcagcct ttcatagggc 300
ggggtccatg tgntggcant 320

<210> 598
<211> 688
<212> DNA
<213> Homo sapiens

<220>
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<222> (343)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (471)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (507)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (582)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (584)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (604)
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<222> (637)
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<220>
<221> misc feature

<222> (642)
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<220>
<221> misc feature
<222> (650)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (673)
<223> n equals a,t,g, or c

<400> 598
gcccaaaccc actccacctt actaccagac aaccttagcc aaaccattta cccaaataaa 60
gtataggcga tagaaattga aacctggcgc aatagatata gtaccgcaag ggaaagatga 120
aaaattataa ccaagcataa tatagcaagg actaacccct ataccttctg cataatgaat 180
taactagaaa taactttgca aggagagcca aagctaagac ccccgaaacc agacgagcta 240
cctaagaaca gctaaaagag cacacccgtc tatgtagcaa aatagtggga agatttatag 300
gtagaggcga caaacctacc gagcctggtg atagctggtt gtncaagata gaatcttagt 360
tcaactttaa atttgcccac agaaccctct aaatcccctt gtaaatttaa ctgttagtcc 420
aaagaggaac agctctttgg acactaggaa aaaacctttg tagagagagt naaaaattta 480
acaccccata gtaggcctaa aagcagncac caattaaaga aagcgttcaa gcttcaacac 540
ccacttccta aaaaattcca aacatataac tggaacttcc tnanacccaa ttgggaccaa 600
tttntcaccc ctattagaaa gaaactaatg gttagtntta angtaaccan tgaaaaacat 660
ttttccttcc ggnattaaag ccctggcg 688

<210> 599
<211> 748
<212> DNA
<213> Homo sapiens

<220>
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<222> (543)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (613)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (657)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (707)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (727)
<223> n equals a,t,g, or c

<400> 599
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tagaaattga aacctggcgc aatagatata gtaccgcaag ggaaagatga aaaattataa 120
ccaagcataa tatagcaagg actaacccct ataccttctg cataatgaat taactagaaa 180
taactttgca aggagagcca aagctaagac ccccgaaacc agacgagcta cctaagaaca 240
gctaaaagag cacacccgtc tatgtagcaa aatagtggga agatttatag gtagaggcga 300
caaacctacc gagcctggtg atagctggtt gtccaagata gaatcttagt tcaactttaa 360
atttgcccac agaaccctct aaatcccctt gtaaatttaa ctgttagtcc aaagaggaac 420
agctctttgg acactaggaa aaaaccttgt agagagagta aaaaatttaa cacccatagt 480
aggcctaaaa gcagccacca attaagaaag cgttcaagct caacacccac tacctaaaaa 540
atnccaaaca tataactgac tccttacacc caaattggac ccaatctatc acccctatag 600
aaagaactaa tgntagtatt aagtaaccat gaaaaaccat tcttcctccg gattaanccc 660
tgcgtcagga ttaaaacccc tgaactggcc atttaacagg cccaatntct taccattcaa 720
cccaccnagg tcattattac ccttactt 748

<210> 600
<211> 253
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (85)
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<220>
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<222> (91)
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<220>
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<222> (94)
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<220>
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<222> (193)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (197)
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<220>
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<222> (204)
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<220>
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<222> (250)
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<220>
<221> misc feature
<222> (251)
<223> n equals a,t,g, or c

<400> 600
cctgaccaca cgctggggca tcaacaaatg atcacttgac ttaatctgcc cctatgaacg 60
ccccgggaaa aaccgcttgn atgcnccaaa nctngtggaa ctttgcccca gcagtgatgc 120
ctgccaggaa agggttgaac cgcgaacctt gacgaagggg gggcccggtt acccaattgc 180
ggccctatag tgnagtngtg attnacaatt gcactgggcc gtcgtttttg acaagttcgt 240
gatgtttggn nat 253

<210> 601
<211> 524
<212> DNA
<213> Homo sapiens

<220>
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<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (280)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (325)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (338)
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<220>
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<222> (411)
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<220>
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<222> (480)
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<220>
<221> misc feature
<222> (494)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (500)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (507)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (524)
<223> n equals a,t,g, or c

<400> 601
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gtccacgtcg ctacgagtca gcccatccat ccatggctac cacttcgaca cagcctctcg 120
taagaaagcc gtgggcaaca tctttgaaaa cacagaccaa gaatcactag aaaggctctt 180
cagaaactct ggagacaaga aagcagagga gagagccaag atcatttttg ccatagatca 240
agatgtggag gagaaaacgc gtgccctgat ggccttgaan gaagaggaca aaagacaagc 300
ttttccattt ctgaaactgc ggaanttttc cttcaaantt cattgaagag aagaggttgg 360
ttaaggacgt tttccaggat tggacattca aagaccagtg ggtttttggg nttttacagt 420
tgcagctttg tttttacctt acagtttttt tttttcaggt tccaggtttg aagggcccgn 480
ttgaaaggcc cggnttacan ttgtttnaag gttcccacat tttn 524

<210> 602
<211> 397
<212> DNA
<213> Homo sapiens

<220>
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<222> (309)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (343)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (363)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (379)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (386)
<223> n equals a,t,g, or c

<400> 602
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gccgcgcggg cgggctgagt gagcaagaca agacactcaa gaagagcgag ctgcgcctgg 120
gtcccggcca ggcttgcacg cagaggcggg cggcagacgg tgcccggcgg aatctcctga 180
gctccgccgc ccagctctgg tgccagcgcc cagtggccgc cgcttcgaaa gtgactggtg 240
cctcgccgcc tcctcttcgg tgcgggacca tgaagtgctg ccgtcggtgg tgctgaaact 300
ctttctggnt tcattctctt cggcactggt tactggcgaa aancctggaa acggctttcg 360
ganaaggcta actgctggna acaagnaaac cggaacc 397

<210> 603
<211> 76
<212> DNA
<213> Homo sapiens

<220>
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<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (45)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (55)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (59)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (64)
<223> n equals a,t,g, or c

<400> 603
tcgacccacg cgtccgccca cgcgtccggt gnttagtatc cccgncctgt gggcngccnc 60
agtntcccct cctaag 76

<210> 604
<211> 127
<212> DNA
<213> Homo sapiens

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<222> (20)
<223> n equals a,t,g, or c

<220>
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<222> (67)
<223> n equals a,t,g, or c

<220>
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<222> (95)
<223> n equals a,t,g, or c

<220>
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<222> (98)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (126)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (127)

<223> n equals a,t,g, or c

<400> 604
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ctcctnn 127

<210> 605
<211> 138
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ggttgcanga attcggcacg agagggancc gtgggccggg cgcgccggtt cccggcacnt 120
gtctcggcac gtgncanc 138

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cagcagcccg gaggcaccac ncgcnacccg agtctcaccc tc 102

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naaaccaaat tngccccnaa 80

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<223> n equals a,t,g, or c

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ggactcgggg cgctggaggg aagtttcgtt cttcggagaa acagaacgcg ctcgaggggg 120
caccgtgggg cnaaggnnnc actcggttgc ggcggcagga gtgagggaca gtcccccgat 180
ttcctgctcc ctggggccct ggggacgttc cggccaccgg agcgactgtc acgccgacgg 240
ggatcaccgg cgcgagttgg ggggtcggaa agcgcctcct cccgccggtc gcggtccgct 300
aaccacttct cgcttgcctg ttccgctcct taagagcaac tgttgccctt ttgaagcagn 360
ataagtgtgc tgngctngaa gcttancggg ttgnttgt 398

<210> 609
<211> 275
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<213> Homo sapiens

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<222> (261)
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<220>
<221> misc feature
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<220>
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<222> (274)
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tttctgtcaa cactaatgaa gtcaacattg cctgaatgtc tgaataatga aacacatccc 180
tgtttaaaag tatgtaactg aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaanaaaaaa 240
aaaaaaaaaa aaaaaaaaaa nncccncggg gggnc 275

<210> 610
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<213> Homo sapiens

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<220>
<221> misc feature
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tctcctcagc cgagaatgac ttcgtccacc ggatccagga ggtggaagag gatggcccca 120
gcagctgctc ggaggacgat tacagtgagc tgctgcagga gatcacagac aacctgacga 180
ggaaggagat tcagatagag aagatccatt tggacacgtc ctccttcatg gaggagctgc 240
ctggagagaa ggaccttgcc cacgtggtag agatcttatg actttggaac cagcgttcaa 300
gacggaggac ctgcttggca acgtttttnt gagtttccaa gaggaagggg tttcaagntt 360
caattgggtt ggatgataat tcaaggaatt nggcantttt tccctgcccg ggccttaatt 420
tncggaagnc ctg 433

<210> 611
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<212> DNA
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<222> (422)
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<222> (481)
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<220>
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<222> (487)
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<400> 611
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tgctggagca gccggagtcc tccctggtgt tggaggggct ggtgttcctg gcgtgcctgg 120
ggcaattcct ggaaaaccac cccacactgg gaatagccac cttgcccttg tagaatccat 180
ccgcccatcc gtccattcat ccatcggtcc gtccatccat gtccccagtt gaccgcccgg 240
caccactagc tggctgggtg cacccaccat caacctggtt gacctgtcat ggccgcctgt 300
gccctgcctc caaccccatc ctaaactccc ccaaggcgtn cggggctgtg cagactgggg 360
tgccaagcat cttctcccca accggggtgt tcccacatgc agtantgtat aacccccatt 420
cnttcctcgg tccaatgaac ttcagagcag ttccattcnt gcccggccat cttttgtgtc 480
ngctgtnaaa ataaata 497

<210> 612
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<212> DNA
<213> Homo sapiens

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<220>
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<222> (498)
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gatnttttnt naaaatctct gtatgaaatn atctccgggg agatagattc nccatntttc 120
ccctgaagnt ttaggggcct ntgcctgcca ctccanaccc tntttntgaa gggcccaagt 180

nactcactat gnaaagaagt cattccctct ngttagtgtt aaanccagtt atgggtcttc 240
ctggaatggn ggataatcca cacgnggnta aatccaaggg ttgnttnatn tgggttcctc 300
cctcccctcc ccttccacca gggnttccct gacagnggcc acagggngac ttttnagggg 360
ttttaggtca ttgnggggat gggtnccngg aaatgggncc agatctgnat tgggggcccc 420
ccntggttgt cccatggggt tnttagnggn ttttaggggn tngtgggggt aaaggggttt 480
ttttaacaaa ntnnttnncc agg 503

<210> 613
<211> 197
<212> DNA
<213> Homo sapiens

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<220>
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<223> n equals a,t,g, or c

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<222> (185)
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caagtggggt ggcccttgtg cacagagctn caggtgacct ctggagagac atgggcattn 120
acatggaaag ctaaaacgga agcttaagct tntattactc aacanaaact tctgtgagac 180
naaangacaa gccatgt 197

<210> 614
<211> 435
<212> DNA
<213> Homo sapiens

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<222> (307)
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<223> n equals a,t,g, or c

<220>
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<222> (419)
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<400> 614
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acataaataa atgaagtaag ccatactgat ttaatttatt ggatgttatt ttccctaaga 120
cctgaaaatg aacatagtat gctagttatt tttcagtgtt agccttttac tttcctcaca 180
caatttggaa tcatataata taggtacttt gtccctgatt aaataatgtg acggatagaa 240
tgcatcaagt gtttattatg aaaagagtgg aaaagtatat agctttagcc aaaggtgttg 300
cccatcnaag aaatgagcga tatatagaat agtgtgggca ttctcctgta agtggagtga 360
aggggtgaca ttctccccac tctnccancn ggttcncccc atattgaata aaggacgcng 420
agagacttga accta 435

<210> 615
<211> 272
<212> DNA
<213> Homo sapiens

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<220>
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<222> (194)
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<220>
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<220>
<221> misc feature
<222> (253)
<223> n equals a,t,g, or c

<220>
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<222> (267)
<223> n equals a,t,g, or c

<400> 615
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cggntccggg aattcccggg gtcgacccac gcgntccgga ataatggaat ataatatgtc 120
ttcataatat aacaacacta ntncnctaat ngtaagatta anttaggcag tcttctacca 180
aatgtggtaa tgnngattgc ctcaaaattg tggtccacat aatccacnct catcttgcaa 240
agcgctattt cangcacatc attggantac ag 272

<210> 616
<211> 160
<212> DNA
<213> Homo sapiens

<220>
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tctttgctgg ttaantcagg acnaacgagg aggcacgtca gtccaccccn ctcctctccc 120
attttccgtg ttgntccctt gcttaacngg caaagacctg 160

<210> 617
<211> 205
<212> DNA
<213> Homo sapiens

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<222> (30)
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<221> misc feature
<222> (190)
<223> n equals a,t,g, or c

<220>
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<222> (194)
<223> n equals a,t,g, or c

<400> 617
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ctggcctctg ctttctcctt taattgtaaa gtagaagcta taaagcagta tttttcttga 120
caaaaaaaaa aaaaaaaaca aaaaaaaaaa aaaaaaagga aaaaaaaaaa aaaaaaaaan 180
gggggggnnn cccngaaaaa aaaac 205

<210> 618
<211> 450
<212> DNA
<213> Homo sapiens

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<222> (222)
<223> n equals a,t,g, or c

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<220>
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<222> (405)
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<222> (423)
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<222> (428)
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<220>
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ttagcggcca tcgcccagct cgtcttcctt ctaccagacg ctggtgctgg aaaagagaag 120
tgtaagaata acttgcgcca ttaggcccat cggaaaggcc caccaccctt taggaagatt 180
actggctgtt tatagaaggc ccgtgtatat cctatgaaga angctggctc tcaacttccc 240
ccccagcctt ttaaaagaaa acatttgcta catcgagccg ttctaggtgt aaagaggttg 300
ttgacttatg atagagttag aaaatcacac atccttgtaa attncccatt tggtttaaaa 360
aaaaaaaaaa aaaactcgag ggggggcccc gggtacccaa tttgncccta aaagggagnc 420
ggnattanaa ttcactggcc ggcgntttta 450

<210> 619
<211> 294
<212> DNA
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<220>
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<220>

<221> misc feature
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<220>
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tnccagccct ggctcaactc tgaagaagga tcttgctaca gaaggagccc ttgggctccc 180
ttnctctttg gatagcagtt ataaatgccc ttgttcccaa taaaactggg cagatgggaa 240
aaaaaaaaaa aaaaaaaaaa aaaaaacccc gggggggggnc ccngncccnn tttg 294

<210> 620
<211> 127
<212> DNA
<213> Homo sapiens

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<222> (117)
<223> n equals a,t,g, or c

<220>
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<222> (125)
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ctggtgatcg ggggcggctc gggcgggctn gccancgtng tggagagcca caagctnggt 120
ggcantt 127

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<212> DNA
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<220>
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ccaacccagc ccagctcagc tcagcncagc ccagctcagc tcagctcagc nnagn 115

<210> 622
<211> 507
<212> DNA
<213> Homo sapiens

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<222> (358)
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<220>
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<223> n equals a,t,g, or c

<220>
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gttttttttct gtgtacattt ttttcctaag tttatggcac agggtagacc ttaagtattc 120
ctcctccatc cttcattctt caccctccat tggatcctca agttttaatg aattccaatt 180
ataccttaca tcagcaagtt aaaaaaagta ctttaaaata aagcaaaggg agactgttgc 240
tcaaccatca ggaaacagtt gtcagaagac atcattggtt ctgtgtttcc tacggaaatn 300
agaaacgata aatattgcac tgaatgtttg tggtttggag tccctgaata ataaagangc 360
aatatatttg cagaaagtcn catagggttt tttaatgcag aattttgtca gaagacaatg 420
gcgctgcatg tttttctttg aattgcaaat nttcattgct aaagantttt tttaagatgg 480
gcatnttgct ttgaaaaaga aaanatt 507

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<212> DNA
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<222> (290)
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<222> (302)
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<221> misc feature
<222> (308)
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<220>
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<222> (340)
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gcaaattact tctaaagaat catcagtgta tagattagaa gtgctcatta cctgcaactt 120

ttaaaaaaaa ttcagttata gctgcttttg aagaggtttc catttttatt taaattacta 180
atggatcaaa gaacaattgt ttattttttc tctttggttt tagatattaa tgataacctt 240
gttgggaatt ttttttccaa agaaaatatt tttatgaatt gaaatnaatn ttgaatgttt 300
tncttccntt tcatttacct actcttggca gtgttagggn 340

<210> 624
<211> 223
<212> DNA
<213> Homo sapiens

<220>
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<222> (202)
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<222> (204)
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<220>
<221> misc feature
<222> (212)
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<222> (222)
<223> n equals a,t,g, or c

<220>
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<222> (223)
<223> n equals a,t,g, or c

<400> 624
ggcacgagct aagttcggca tcaatatggt gacctcccgg gagcggggga ccaccaggtt 60
gcctggcctg ataatgtcct ttttaaatgg agttcagact attaacattt aatgtaatta 120
tcaatatagt tggatttaag tgtactgtct tgctatttgt ttcctattta tgccaacttt 180
tttttaatgt cttttgttct tntngttttc tnttctttcc tnn 223

<210> 625
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<212> DNA
<213> Homo sapiens

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<222> (337)
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<220>
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<222> (491)
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<220>
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<222> (495)
<223> n equals a,t,g, or c

<220>
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<222> (502)
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<220>
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<222> (507)
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<400> 625

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aatgtaacat gacaagagat tttgcgtttg acattgtgtc tgggaaggaa gggccagacc 120
ttggaacctt tggaacctgc tgtcaacagg tcttacaggg ctgcttgaac cctcataggc 180
ctaggctttg gtctaaaagg aacatttaaa aagttgccct gtaaagttat ttggtgttca 240
tttgaccaat tgcatcccca gcttnaaaag caagaagcat ccgtttccct ggaattataa 300
agaatttgtt tcccacccct aaaattttta cagtttnaaa aacttgggtt tcccattgaa 360
cattcctcct tttttcccca gtttccccca aattcctntt ttttattttt ttggggaaat 420
aaggtttgcc ccattttttta ancctacact actttnggaa atgccccncc cctggaatga 480
anggaaaggt ncccnattac gnctttnagg ttaattacag ttccctcccc ttccccctgc 540
c                                                                 541
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<210> 626
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<212> DNA
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<222> (344)
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<222> (355)
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<220>
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<220>
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<222> (480)
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<220>
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<222> (481)
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ggcgatagaa attgaaacct ggcgcaatag atatagtacc gcaagggaaa gatgaaaaat 120
tataaccaag cataacatag caaggactaa cccctatacc ttctgcataa tgaattaact 180
agaaataact ttgcaaggag agccaaagct aagacccccg aaaccagacg nagctacctg 240
agaacagcta aaagagcaca cccgtctatg ttagcaaaat aatgggaaga tttatagggt 300
tgaagcgaca aacctaccga cctgggtgat actggttgtc cnanataaat cttanttcac 360
tttaaatttg nccacagaac ctctnaatcc cttgttaatt taatgttatc caaaaaagaa 420
cagctcttgg gacctaagaa aaaacttgtt naaaaattaa aatttacacc atgtagctnn 480
nac 483

<210> 627
<211> 221
<212> DNA
<213> Homo sapiens

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<222> (189)
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<220>
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<222> (191)
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ggtaccggtc cggaattccc gggtcgaccc acgcgtccgg tcttggggnc cacganccag 120
actcaggaca gagtggactc tgcctgtgat ggggtggnct ncctgctggc ccccctccac 180
cagtgcctnt ngcatatata tatttggtgt gcacaggaag n 221

<210> 628
<211> 122
<212> DNA
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<220>
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<220>
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<222> (58)
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<222> (70)
<223> n equals a,t,g, or c

<220>
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<222> (71)
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<400> 628
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catgaaggan nagggaagga agatgagcta agatgaagat gaagaaagaa agatgatgat 120
ga 122

<210> 629
<211> 252
<212> DNA
<213> Homo sapiens

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<222> (12)
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<220>
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<222> (17)
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<222> (175)
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<220>
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<222> (182)
<223> n equals a,t,g, or c

<220>
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<222> (243)
<223> n equals a,t,g, or c

<400> 629
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cagacatttg gtgtatgtgc ttggctgagg agccaatggg gcgaagctac catctgtggg 120
attatgactg aacgcctctn agtcagaatc ccgcccaggc ggaacgatnc ggcnncgccg 180
cngatcctcg gttggcctct gatatccggt cccccgcctg tccccgccgg cggggcggga 240
ccngggtccc gt 252

<210> 630
<211> 619
<212> DNA
<213> Homo sapiens

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<220>
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<222> (18)
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<220>
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<222> (19)
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<220>
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<222> (22)
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<220>
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<222> (64)
<223> n equals a,t,g, or c

<220>
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<222> (86)
<223> n equals a,t,g, or c

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<222> (93)
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<220>
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<220>
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<222> (251)
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<220>
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<222> (484)
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<222> (528)
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<220>
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<222> (558)
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<220>
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<221> misc feature
<222> (605)
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<220>
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<222> (613)
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<400> 630
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cacnatcaaa agggacaagc atcaancacg cannaatgca gctnaaaacg cttagcctag 120
ccacaccccc acgggaaaca gcagtgatta acctttagca ataaacgaaa gtttaactaa 180
gctatactaa ccccagggtt ggtcaatttc gtgccagcca ccgcggtcac acgattaacc 240
caagtcaata naagccggcg taaagagtgt tttagatcac cccctcccca ataaagctaa 300
aactcacctg agttgtaaaa aactccagtt gacacaaaat agactacgaa agtggcttta 360
acatatctga acacacaata gctaagaccc aaactgggat tagatacccc actatgctta 420
gccctaaacc tcaacagtta aatcaacaaa actgctcgcc acaacactac gagccacagc 480
ttanaactca aaggaactgg cggtgcttca tatccctcta aaaagaanct gttctgttat 540
cgataaaccc cgatcaanct ccccactctt gctcacctat ntccaaaaaa aaaaaaaaaa 600
ctcangggggg gcngggtcc 619

<210> 631
<211> 210
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (5)
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<220>
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<222> (16)
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<220>
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<223> n equals a,t,g, or c

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<220>
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<220>
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<222> (136)
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<220>
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<222> (162)
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<220>
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<222> (165)
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<220>
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<222> (206)
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gcnnaaatcc gaatgacccn agttttccta ttgagtaaac angatcccag ttgtgcccca 120
ctagcatgan gcctgnagtt ccggtttcat gcatgaaatt gnttntggag agttttgtaa 180
gttgtaaagc caattactgg cttttnacat 210

<210> 632
<211> 359
<212> DNA
<213> Homo sapiens

<400> 632
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gcctcaaggc tgccatctgt cttgtagggc ctggccttgt gggcaggggg cagtcctgtg 120
ccttgtgggc cctcagcctc tgagggcaga gatgctgtca gtgccgcagg gtaagggacg 180
agtcttctgg aaggctctgc catggacatt tgtcctcggg ctcagaggcc ccaccctgcc 240
ccacacctgc ccctaatcac tgcagtgtcc agcccagtgt tgaacagatt gtagcgttct 300
gtctcattac gagcaaataa atagactttc attggaaaaa aaaaaaaaaa aaaaaaaag 359

<210> 633
<211> 328
<212> DNA
<213> Homo sapiens

<220>
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<222> (221)
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<220>
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<222> (223)
<223> n equals a,t,g, or c

<220>
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<222> (246)
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<220>
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<222> (286)
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<222> (319)
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<222> (323)
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tgggcggtga ttccgcttct gcctgggctc ctgccatggc ccccgagagg ggctgacact 120
ttagctcccg gtgcaggtga gaacccgccc ggaggaagaa ggaaggcgcg ggccggggat 180
taggagacgg aggcggactc ggagccaggg aaccaggggt ncnggctaga gctggagtcg 240
tgagcncgcg cccgcnccgc tctgggagga ccgcgagatg cccgtnctga agcagctggg 300
ccccgcgtca cccaagaanc ggnctgat 328

<210> 634
<211> 330
<212> DNA
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<220>
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<220>
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<222> (326)
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<220>
<221> misc feature
<222> (327)
<223> n equals a,t,g, or c

<220>
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<222> (329)
<223> n equals a,t,g, or c

<400> 634
cagaatcctc tttcctcccc atttggccct gggctcaggg gaccaggtgg ggcgggtggg 60
gagctgtccg gtgctaccac accgtgccct cagtggacta accacagcag cagccaggga 120
tgggccctgg aggttcccgg ccggagagtg cctctcccct ctgccatcca cgtcaggtct 180
ttggtggggg gaccccaaag ccattctggg aagggctcca gagtccagcc gtccagctgc 240
tcctttccca gtttgatttc aataaatctg tccactcccc ttttgtgggg gtgaacgttt 300
taacagccaa aaaaaaaaaa aaannnnana 330

<210> 635
<211> 111
<212> DNA
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<220>
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<400> 635
caatcccggt ntacccagng tccnttttcc ccccncanga aaagaaacaa caacttgggg 60
taaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaat aaagaaagnt c 111

<210> 636
<211> 298
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

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<222> (225)
<223> n equals a,t,g, or c

<220>
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<222> (288)
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<400> 636
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gacctgtttg ttgcgttttg tgctttgatg ccaggaatgc cgcctagttt atgtccccgg 120
tgggggcaca cagcgggggg cgccaggttt tccttgtccc ccagctgctc tgccccttttt 180
ccccttcttc cctgactnca ggcctgaacc ngtcccgtgn ctgtnaataa atctttgtga 240
aattaaaaaa aaaaaaaaaa aaaactcggg gggggcccg gtaccaantt gggcccctt 298

<210> 637
<211> 491
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

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<222> (133)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (157)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

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<220>
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<222> (298)
<223> n equals a,t,g, or c

<220>
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<220>
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<220>
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<220>
<221> misc feature
<222> (428)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

<220>
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<222> (474)
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<400> 637
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cctnatctgn ggctaccaga gagcagaaag gacccaccct gggactcttc tgtntgttng 120
aaagatgcgc canccctgnc ccccggcttc ccctctntcc gccacagaac ccagttttct 180
agaccagggg gacgggcacc catcactccg caggcgaaat naaagccccc ctgccccggc 240
cctaaacccc tgtgncctcc tttcccatgg tttccccgag agccagttac aaccctgncc 300
cgggccttaa cccccatggc ttcttttctg tggttttccc ccagaggcca gttagttccc 360
aactngnaaa nccgtttggg nttccccatn aaaaaaaatt ttggtttcat tttnaaaaaa 420
aaaagggnag gagggggggg gcccggttaa ccatttgggc tttaagtgng tgnnttttaa 480
aattaattgg c 491

<210> 638
<211> 331
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (55)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (79)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (111)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (135)
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<220>
<221> misc feature
<222> (142)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (163)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (206)
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<220>
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<222> (218)
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<220>
<221> misc feature
<222> (257)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (277)
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<220>
<221> misc feature
<222> (286)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (309)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (321)
<223> n equals a,t,g, or c

<400> 638
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ctactggatg cttacagtna ctgtggatac gggggttccc tttccccatt nagtgacatg 120
tcctctctgc ttggngtaaa cnattctngg gaggacactt ttnccaataa actctttccc 180
cagctgatta gtgtctaagg aatganccaa tacttgtntg cccttttcct tggactatta 240
acaattgcct gggaggntta gcaagaggaa gcctgtntgt aatttnattt caaaaaggca 300
aaatagagng ttttacagtc ntaggggaat t 331

<210> 639
<211> 444
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (235)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (236)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (237)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (426)
<223> n equals a,t,g, or c

<400> 639
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ctcccggtac cgccgccgcg cccgccaaac ctgcgccccc agctacaccc ggagcgccga 120
cctccccagc agaacaccgc ctgttgaaga cctgctggag ctgtcgcgtg ctttctgggt 180
tggggctgat gggggcgggc gggtacgtgt actgggtggc acggaagccc atgannntgg 240
gataccccc gagtccatgg accattacgc agatggtcat cggcctcagt gagaatcaag 300
gcattgccac ctggggtatc gttgtcatgg cagaccccaa agggaaggcc taaccgcgtt 360
gtttgaaagt accaccagtg aatctgtctt ctgtctctgt ccctttcccc gtgacacaca 420
gagcangcat ggaatttaat gggt 444

<210> 640
<211> 598
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (205)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (397)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (484)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (518)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (520)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (543)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (557)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (568)
<223> n equals a,t,g, or c

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ggcgatagaa attgaaacct ggcgcaatag atatagtacc gcaagggaaa gatgaaaaat 120
tataaccaag cataatatag caaggactaa cccctatacc ttctgcataa tgaattaact 180
agaaataact ttgcaaggag agccnaaggt taagaccccc gaaaccagac gagctaccta 240
agaacagcta aaagagcaca cccgtctatg tagcaaaata gtgggaagat ttataggtag 300
aggcgacaaa cctaccgagc ctggtgatag ctggttgtcc aagatagaat cttagttcaa 360
ctttaaattt gccacagaac cctctaaatc cccttgnaaa tttaactgta gtccaaagag 420
gaacagctct ttggacacta ggaaaaaacc ttgtagagag aggaaaaant tacacccata 480
gtangcctaa aagcagcacc aattaagaaa gggtcaantn acaccatact aaaatccaac 540
ctntactgac tctacancca ttggccantt tcctttaaac caggggtatc cgaacttc 598

<210> 641
<211> 466
<212> DNA
<213> Homo sapiens

<220>
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<222> (17)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (258)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (280)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (314)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (337)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (376)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (443)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (464)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (465)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (466)
<223> n equals a,t,g, or c

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caacctccga gcagtacatg ctaagacttc accagtcaaa gcgaactact atactcaatt 120
gatccaataa cttgaccaac ggaacaagtt accctaggga taacagcgca atcctattct 180
agagtccata tcaacaatag ggtttacgac ctcgatgttg gatcaggaca tcccgatggt 240
gcagccgcta ttaaaggntc gtttggtcaa cgattaaagn cctacgtgat ctgagttcag 300
accggagtaa tcanggcggg ttctatctac ttcaaantct tcctgtacga aaggacaaga 360
gaaataaggc tacttnacaa agcgccttcc ccgtaatgat atcatcttaa cttagtatta 420
tacccacacc cacccaagaa canggggttgg taagaaaaaa aaannn 466

<210> 642
<211> 575
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (20)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (116)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (123)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (127)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (130)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (134)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (140)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (143)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (150)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (173)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (193)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (238)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (309)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (327)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (424)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (491)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (492)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (497)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (532)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (543)
<223> n equals a,t,g, or c

<400> 642
gttgnancag tccactctgn ctttaaaacn tagtgattac aatatttaga aagttttgag 60
cacttgctat aagtttttta attaacatca ctagtgacac taataaaatt aacttnttag 120
aangcangan gtgnttgtgn gtnacaaatn cagaaagtga actgcagtgc tgnaatacac 180
atgttaatac tgnttttctt ctatctgtag ttagtacagg atgaatttaa atgtgctntt 240
cctgagagac aaggaagact tgggtatttc ccaaaacagg taaaaatctt aaatgtgcac 300
caagagcang aggatcaact tttaggncat tgatgatctg taaagacaac aaatcccttt 360
ttttttctca attgacttaa ctgcatgagt tctggtttat ctacctctaa agcaaatctg 420
cagngttcca aagactttgg tatggattaa gcgctgccag taacaaaatg aagtctcaaa 480
acagagctca nntgcanaaa agcatatttt ctgcggttct ggactgcact gntgccttgc 540
ctnacataga cactcagaca cccttacaaa cacag 575

<210> 643
<211> 492
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (125)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (310)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (461)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (492)
<223> n equals a,t,g, or c

<400> 643
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cccgaaacca gacgagctac ctaagaacag ctaaaagagc acacccgtct atgtagcata 120
atagngggaa gatttatagg tagaggcgac aaacctaccg agcctggtga tagctggttg 180
tccaagatag aatcttagtt caactttaaa tttgcccaca gaaccctcta aatccccttg 240
taaatttaac tgttagtcca aagaggaaca gctctttgga cactaggaaa aaaccttgta 300
gagagagtan aaaatttaac acccatagta ggcctaaaag cagccaccaa ttaagaaagc 360
gtcaagctca acacccacta cctaaaaaat cccaaacata taactgaact cctacaccca 420
attggaccaa tctatcaccc tatagaagaa ctaatggtag nataagtaac atgaaaacat 480
tctccttcgc an 492

<210> 644
<211> 68
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<400> 644
gatacntcan tgggaacagg gcccatggaa atgtacagga ntttccctat tttggtgntc 60
agcttgaa 68

<210> 645
<211> 488
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (265)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (290)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (302)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (336)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (342)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (365)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (385)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (420)
<223> n equals a,t,g, or c

<400> 645
ggcacagcgc tcgtccacgg tcttctgcat cactggtata cacactcgtt agcgtccatt 60
tcttatttaa ttagaatgga taagatgatg ttaaatgcct tggtttgatt tctagtatct 120
attgtgttgg ctttacaaat aattttttgc agtcttttgc tgtgctgtta cattactgta 180
tgtataaatt atgaaggacc tggaaataag gtataaggat cttttgtaaa tggagacaca 240
tacaaaaaaa atctttgaat ggttnaatag ggatggaatg gggaaagtgn ttttggaaag 300
anattcccat tttgccgggg agactatttg aagtgnccat cnttgtccca aacaaggtaa 360
atttnttttt gtaaagtgcc aagtnccggc aggcagaagg aaccgtttac agtgtgattn 420
aagaaaggga aaccgtgccc tttttagcct ccaaacccaa ttgaccataa tttacaggcc 480
ccggtttg 488

<210> 646
<211> 302
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (287)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (288)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (290)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (297)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (302)
<223> n equals a,t,g, or c

<400> 646
ggatgttttt atattacatg aatttaataa taaactaaac ttttttttgt ctcccgttat 60

tgaaaagtac caaagcttct ttctgttgtg tttgatttta ctataggggt tttgcttttt 120
ctagagatac ttttcattta acagcttttg ttaagtgtca ggctgcactt tgctccatat 180
aattattgtt ttcagatttc aacttgtatg tgtttgtctc ttaaagcatt ggtgaaatca 240
catattttat attcagcata aaggagaata aattccagaa aacacannan aaaaaanaaa 300
an 302

<210> 647
<211> 137
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (112)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (114)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (115)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (117)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (132)
<223> n equals a,t,g, or c

<400> 647
gggcgggggg gcntnccccg aggggctctc gcttctggcg ccaagcgccc ggtcgcgcgc 60
cggccgggcg ctacccgctc cggggacagt gccaggtggg gagtatgact gngnngnaac 120
acctgttaaa cnggaac 137

<210> 648
<211> 432
<212> DNA
<213> Homo sapiens

<400> 648
ggcacgagct gcagcggggt gagcggcggc agcggccggg gatcctggag ccatggggcg 60
cgcgcgcgac gccatcctgg atgcgctgga gaacctgacc gccgaggagc tcaagaagtt 120
caagctgaag ctgctgtcgg tgccgctgcg cgagggctac gggcgcatcc cgcggggcgc 180
gctgctgtcc atggacgcct tggacctcac cgacaagctg gtcagcttct acctggagac 240
ctacggcgcc gagctcaccg ctaacgtgct gcgcgacatg ggcctgcagg agatggccgg 300
gcagctgcag gcggccacgc accagggctc tggagccgcg ccactgggat ccaggcccct 360
cctcagtcgg cagccaagcc aagcctgcac tttaatagac cagcaccggg cttcgttatc 420
gcgaaggtca aa 432

<210> 649
<211> 544
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (395)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (438)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (459)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (505)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (519)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (531)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (540)
<223> n equals a,t,g, or c

<400> 649
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caatgcagag accatgctga gctcactgga cactgtgctg gggctagggg atgacaccct 120
tctgtggcct caagtgtgat gccttacaaa agcaccactc agatgggcag ctggactctg 180
gtgtcctgag actctgccct cttcccacag cctccctgcc ccacccatcc ctgcaaagcc 240
atttttcaga cagagccatt cctaagaaca ctgaagggct ggaatgctgg ctggccactc 300
tctgcctcag tggcctccct aaagcctgga agaaggaggg tcctgattgc caaggaaacc 360
tcctcattgg gctaaggaga cactggagtc tggantgtgg agccccacag tcttgcaggt 420
caaatgctct ccttgcanat ctggcctggt tgtaaccant gggctctggc tctgccctgg 480
gggcaaaagg ggccctcctt gccangggag aaaagccang gtctctttgg ncgatggtgn 540
aatc 544

<210> 650
<211> 406
<212> DNA
<213> Homo sapiens

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<220>
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<222> (393)
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<400> 650
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agaaattgaa acctggcgca atagatatag taccgcaagg gaaagatgaa aaattataac 120
caagcataat atagcaagga ctaacccctа taccttctgc ataatgaatt aactagaaat 180
aactttgcaa ggaagagcca aagctaagac ccccgaaacc agacgagcta cctnagaaca 240
gcttaaagag cacacccctc tatttttgcc anaatagtgg gaaagattta taggtttgaa 300
ggcgaacaaa cctaccgagc ctggttgatt agcttgtttg tcccaagatt agaatcttta 360
tttcccactt tttnattttt gccccaccag aanccctcct tttaaa 406

<210> 651

<211> 444
<212> DNA
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<220>
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<222> (412)
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<220>
<221> misc feature

<222> (420)
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<220>
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<222> (444)
<223> n equals a,t,g, or c

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cataatgaat taactagaaa taactttgca agggagagcc aaagctaaga cccccgaaac 120
cagacgagct acctaagaaa cagctaaaag agcacacccg tctatgtagc aaaatagtgg 180
gaagatttat aggtanaggc gacaaaccta ccgagcctgg tgatagctgg tttcccnaag 240
aatagaatct tagttcaact ttaaatttgc ccacngaacc ctctaaatcc cccttgttna 300
atttaactgt ttngtcccaa anaaggaaca gctccttttg ggaccctagg aaaaaacctt 360
nttaaaaaaa agtttaaaaa attttacncc ccttgtttgg ccttaaaacc cnccccccan 420
ttaaaaaagg tttcaaactc ccan 444

<210> 652
<211> 69
<212> DNA
<213> Homo sapiens

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<220>
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<222> (40)
<223> n equals a,t,g, or c

<220>
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<222> (57)
<223> n equals a,t,g, or c

<400> 652
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tatggtttt 69

<210> 653
<211> 649
<212> DNA
<213> Homo sapiens

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<222> (235)
<223> n equals a,t,g, or c

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<222> (253)
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<222> (268)
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<222> (396)
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<222> (424)
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<222> (429)
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<220>
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<220>
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<222> (444)
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<220>
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<222> (532)
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<221> misc feature
<222> (568)
<223> n equals a,t,g, or c

<220>
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<222> (591)
<223> n equals a,t,g, or c

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<220>
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<222> (617)

<223> n equals a,t,g, or c

<220>
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<222> (646)
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ccagctaagg acataaaaca aaaataaaca aacaaaaaca aatagccatc tgctatcagc 120
atcattatgt aaaagaaaat atattttagc ccctaaaatt aggaagaatg taatctcaga 180
ataaaggttg tcatttaagt tgaataaata tatagcttta tgaaaaacat anaanaaaan 240
aaaaaaaaaa aangccccga aaggaccntn ttaancaaaa ccnnattgaa aaggcttgga 300
aaaacaaagn cgnttgaaag ctgnttccag taaaccaaac caanccagta nngngggggca 360
attngtngcc ttancagtac ccantcaaaa aanagngntt tgggaaaagg gggaaanaan 420
aggnaatcng aancttaagc ttanactttt gggaaanatt ccccccttgga aattganaag 480
tttttttgggg aaaaggnaaa aggnacaacc ttnttgaaaa tttangggggg gnattaaact 540
taaatttgcc taattggggg gaaccccntt taaaaaaaaa ttggacttgg ngactaaagt 600
tgcantgaaa tttttttnccc ttaaaaaagg ggccttgtta cccttnagg 649

<210> 654
<211> 598
<212> DNA
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<220>
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<222> (343)
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<220>
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<222> (433)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (455)
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<220>
<221> misc feature
<222> (517)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (522)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (561)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (590)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (592)
<223> n equals a,t,g, or c

<400> 654
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aaccacttga ccttgaccac catgttgctg ccccacgact cccacatgct ctcgatgcgg 120
ccgatgtagg ggaggttggg ccgcccagct gacaggaaga cggcacagtc cccgacacgc 180
agggtctcct cgccccgcac gatggccttg taaaacagct tccgggcctt cccccttcatg 240
ccacgccgct ntgggggaca tgggcagggt ggctctgaaa agccgggggg ctgtggggac 300
agattgcggc caggaagcat ggaaggtgtg gtgtgggtgt gantgtgaat ctgaatgtga 360
gtgtgcaggg cgcccacaag ggcaggaagc cgcagcaccg cggcttaagg ccatggcagc 420
catggatctg gancaagggc cacgcctcca cgganccccgc acatggaatc atgactctgg 480
acactggatc tggggacagg gacatgtgga caagacnttc ancacagtgt tttttacgaa 540
ggcggaagaa ccacgaatgg ncccccatgc gcccccccaac aattgccctn gnttaaga 598

<210> 655
<211> 433
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<222> (312)
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<220>
<221> misc feature
<222> (347)
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<220>
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<222> (401)
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<220>
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<222> (415)
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<220>
<221> misc feature
<222> (416)
<223> n equals a,t,g, or c

<220>
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<222> (431)
<223> n equals a,t,g, or c

<400> 655
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cctgcctttt actttcgtgt ggatatgtga agcattgggt cgggaactag ctgtagaaca 120
caactaaaaa ctcatgtctt ttttcacaga ataatgtgcc agttttttgt agcaatgata 180
tttctcttgg aaagccagaa atgctttgta ccagagcacc tccaaactgc attgagaaaa 240
aattcccaga accatcccct ttttccattt ttatattatt tataaagaaa gattaaanct 300
gttttgacta tnttacagcc ctggaattta ctacctccct gtttctntct ccccggaaaa 360
aatgaaacca acgattgggt tcctttgaat tcccgttccc ncctcccgtt atttnnaaaa 420
tcccccccctt ntt 433

<210> 656
<211> 450
<212> DNA
<213> Homo sapiens

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<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (123)
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<220>
<221> misc feature
<222> (135)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (136)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (336)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (350)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (355)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (395)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (414)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (428)
<223> n equals a,t,g, or c

<220>
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<222> (435)
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<400> 656
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acgacagcac gtgttctttt tcactagtag aagtgacgtt ggtttcatgt tggggggggg 120
ggngccattt ttttnntgtt tcagtggaga gcaaaatgaa taacaaagcg ggctcctttt 180
tctggaacct tagacaattc agtacattag tttcaacaag cagaactatg aggctatgtt 240
gtttgggact ttgcaaacca aaaatagttc cattcaaact ggaacatttt gaaataactt 300
tcataacaga atgcaatcaa cggatgatca ttgagngagc gcttgcaggn tgccntcatt 360
tttgaaatca gatgttggcc ttgcaaacaa agggncataa agcactccaa cagnccctta 420
gaaattgnaa agacnacctt tatgctaaaa 450

<210> 657
<211> 434

<212> DNA
<213> Homo sapiens

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<220>
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<222> (80)
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<220>
<221> misc feature
<222> (412)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (427)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (433)
<223> n equals a,t,g, or c

<400> 657
ttttangttg ttaaatacct gtaggtttct tttaatcata aagaaggaaa atgaaagact 60
tgaggatcac ctacatagan cgaaaacaga aaaaaacccc gaatcccatt actttgacag 120
tgtttttaga cctgtgttac taaaaaaaag atgaatgtcc tgaaaagggt gttgggaggg 180
tggttcaaca aagaaacaaa gatgttatgg tgtttagatt tatggttgtt aaaaatgtca 240
tctcaagtca agtcactggt ctgtttgcat ttgatacatt tttgtactaa ctagcattgt 300
aaaattattt catgattaga aattacctgt ggatatttgt ataaaagtgt ggaataattt 360
tttataaaag ggtccatggt tcgtaacccg ccttgtatat ggggagccaa cncccaaatt 420
ataatgnccc ccna 434

<210> 658
<211> 397
<212> DNA
<213> Homo sapiens

<220>
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<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
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<222> (17)
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<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
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<222> (360)
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<220>
<221> misc feature
<222> (377)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (383)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (392)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (395)
<223> n equals a,t,g, or c

<400> 658
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gacagtctca gggacaccat gtagagaatt ttggtctcga ttcagaaaag agaaagagcc 120
agtggttgtt gagacagtag aagagaaaaa ggaacctatc ctagtgtgtc cacctttacg 180
aagccgagca tacacaccac ctgaagatct ccagagtcgt ttggaatctt acgttaaaga 240
agtttttggt tcatctcttc ctagtaattg gcaagacatc tccctggaag atagtcgtct 300
aaagttcaat cttctggctc atttagctga tgacttgggt catgtagtcc ctaaactccn 360
gactccacca gatgtgnagg gtnagagatg tnctnga 397

<210> 659
<211> 156
<212> DNA
<213> Homo sapiens

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<222> (2)
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<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

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<220>
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<222> (98)
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<220>
<221> misc feature
<222> (130)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (150)
<223> n equals a,t,g, or c

<400> 659

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ctctagtctg gcacggtgaa gagacatgan aggngtanaa taagtgggag gcccccggcg 120
cccccccggn gtccccgcga ggggcccggn gcgggg 156

<210> 660
<211> 276
<212> DNA
<213> Homo sapiens

<220>
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<222> (242)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (255)
<223> n equals a,t,g, or c

<220>
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<222> (258)
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<220>
<221> misc feature
<222> (261)
<223> n equals a,t,g, or c

<220>
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<222> (267)
<223> n equals a,t,g, or c

<400> 660
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gaggaaccgc aggttcagac atttggtgta tgtgcttggc tgaggagcca atggggcgaa 120
gctaccatct gtgggattat gactgaacgc ctctaagtca gaatcccgcc caggcggaac 180
gatacggcag cgccgcggag cctcggttgg cctcggatag ccggtccccc cgctgtcccc 240
gncggcgggc agccnccnct ntacgangcc caccgc 276

<210> 661
<211> 275
<212> DNA
<213> Homo sapiens

<220>
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<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5)
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<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (25)
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<220>
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<222> (33)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (186)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (225)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (250)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (259)
<223> n equals a,t,g, or c

<400> 661
cgtnncctac tgangatgtg ttgangccat ggnaatcctg ctcagtacga gaggaaccgc 60
aggttcagac atttggtgta tgtgcttggc tgaggagcca atggggcgaa gctaccatct 120
gtgggattat gactgaacgc ctctaagtca gaatcccgcc caggcggaac gatacggcag 180
cgccgnggag cctcggatgg ctcggatagc cggtcccccg cctgnccccg ccggcgggcc 240
gccccccctn cacgcgccnc gcgcgcgcgg gaaag 275

<210> 662
<211> 506
<212> DNA
<213> Homo sapiens

<220>
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<222> (51)
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<220>
<221> misc feature
<222> (69)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (183)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (191)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (345)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (363)
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<220>
<221> misc feature
<222> (383)
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<220>
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<222> (432)
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<220>
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<222> (445)
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<220>
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<222> (466)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (481)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (487)
<223> n equals a,t,g, or c

<400> 662
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aatgcttana aaaagcttga taaaccactg ggctaagtac acagagggag aggctagcag 120
tatttttaaa ttggtttcta aattttttat agcttgatgg tagataacac atttgcttca 180
atnaaggtaa nccggaaaaa acaaatcctc aaaaagacct ctcaattaga attcttaaat 240
gacaatgttt tctttatcat atatttgaga gattgattta aagaaaaata tgcttgacta 300
tctgaaataa tattttaacc ctatcataaa atctctgcct ggtanaacag ctgactgtgg 360
aanggtaaaa tgcagagaac cantcattgg atctcccttc tctactttgt tactgaaatc 420
ttgaacctgt anaacaatta cttancactg gggttccttt cctaanggga aaataatact 480
naacacntgc agagtaattt ttaaaa 506

<210> 663
<211> 550
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<222> (532)
<223> n equals a,t,g, or c

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ccatttaccc aaataaagta taggcgatag aaattgaaac ctggcgcaat agatatagta 120
ccgcaaggga aagatgaaaa attatagcca agcataatat agcaaggact aacccctata 180
ccttctgcat aatgaattaa ctagaaataa ctttgcaagg agagccaaag ctaagacccc 240
cgaaaccaga cgagctacct aagaacagct aaaagagcac acccgtctat gtagcaaaat 300
agtgggaaga tttataggta gaggcgacaa acctaccgag cctggtgata gctgggttgt 360
ccaagataga atcttaagtt caactttaaa tttgccacag aaccctctaa atccccttgn 420
aaatttaact ggtagtccca agaggaacag ctctttggac actaggaaaa aaccttgtan 480
agagagtaaa aaaattaaca nccatagtan gcctaaaagc agcaccanta anaaagcggt 540
caagctcaca 550

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<212> DNA
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cctctaaatc cccttgtaaa tttaactgtt agtccaaaga ggaacagctc tttggacact 180

aggaaaaaac cttgtagaga gagtaaaaaa tttaacaccc atagtaggcc taaaagcagc 240
caccaattaa gaaagcgttc aagctcaaca cccactacct aaaaaatcca acatataact 300
gaactcctac acccaattgg accaatctat caccctatag aagaactaat gttagtataa 360
gtaacatgaa aacattctcc tccgcataag cctgcgtcag attaaaacac tgaactgaca 420
attaacagcc caatatctac aatcaaccaa caagtcatta ttaccctcac tgtcaaccca 480
acacangcat gctcataang gaanggttaa aaanaaaaaa aaaaactttn gggggggccc 540
gg 542

<210> 665
<211> 712
<212> DNA
<213> Homo sapiens

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<222> (549)
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<223> n equals a,t,g, or c

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<222> (627)
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<222> (635)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (687)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

<400> 665
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gggtcagagg aaaaaacttt actatgacac ggactatggt tccaagtccc gaggccggca 120
gagtcaacag gaggcagagg aggaggaaag agaggaggag gaggaggcac agatcattca 180
gcggcgccta gcccaagcgc tgcaagagga tgattttggt gtcgcctggg ttgaggcctt 240
tgcaaaacca gtgcctcagg tagatgaggc tgagacacgg gtcgtgaagg atttggctaa 300
aggttcagtn gaaagaaaaa cctnaaaatg ttgcaaaagg aatcaccaga actcttggag 360
cttatagaan accttgaaag tcaagttgac agaagttaag gatgagctgg agccattggt 420
agaagttgnt nggaacaagg ggatcattcc acccggaaaa aggaagccaa tactttgagg 480
accaagtaca acctctactt gaattaattg ctcgaacatc agttnttatt tgatcctgaa 540
agctaggana gtcccagcac atggacatct tgtcatagaa aggcttgttc ctaccgaaan 600
ttgatcaaca agctgtccgt tgggatnaaa actgncctaa aaatcgcatn tgttgcactt 660
aggttatctt taaagaagac tgtttcnaag cnaatcacca agccaaacca ag 712

<210> 666
<211> 381
<212> DNA
<213> Homo sapiens

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<222> (18)
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<222> (29)
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<223> n equals a,t,g, or c

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<222> (357)
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<222> (361)
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<220>
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<222> (381)
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tgtacttcaa gatgcctccc tgatgtatag aatctccttg taaaataaat aattgcattg 120
tatatcagtc ttcccatcaa tattaattat taaatatttt agaatttttt tatagttggt 180
atttaaaaaa aaaaaaaaaa agggcggccg ctctagagga tccctcgagg ggcccaagct 240
ttacgcgtgc atgcgacgtc catagctctc tccctatagt gagtcgtatt attaagctag 300

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gcactggccg tgcggtttac aacgtccgtg gactggggag atcngctagc ttggggncct 360
nggttgaagg aaccttactn n                                           381
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<210> 667
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<213> Homo sapiens

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<222> (261)
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<223> n equals a,t,g, or c

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<222> (408)
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ggcagcaagg nacagggnac caacaggtag caagtgtgcc ttcctcaggg cccttcctga 120
gagctccaca gcccaccctg tggccccctg cttggcttgg cctggcctgc ccggccccag 180
ccttccaatg ctgctgcacg tcctcatttt cctttttggt cccctcctgc cccctctggc 240
tgttctgcct ttgggcctca nccccagctg cctgaatttg ggcaaggttc tttctctgtg 300
gncttcaagc tcanccccaa gggttcttga accngggctc ttcccaacgg gcccaaccct 360
aacttaaaaa ntngaacccc tggttttcaa antctttctt aantggtnaa aaaccccaat 420
cccaagggta aaatttc 437

<210> 668
<211> 365
<212> DNA
<213> Homo sapiens

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<220>
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<222> (172)
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<222> (239)
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<220>
<221> misc feature
<222> (243)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (244)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (329)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (330)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (353)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (358)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (362)
<223> n equals a,t,g, or c

<400> 668
ggcagagnat ctctgcaccc tggggcctgg aacagaactg gcaaagaggc aagaggtcac 60
tgagggcctc tgtcacccag gacctgcctc ctgcctgccc ctctcccgcc agactgttag 120
aaaatggaca ctgtgcccag cccggacctt gggcagccca ggccggggtg gngcatgggc 180
ctgggccacc ttctcttcct ttgctgaggc ctccagcttt caggcaggcc aaggccttnt 240
tcnnccccac ccgccctccc caggggggcct cgggagctca ggtgggcccc agtttcaatc 300
ttcccgttgt tgttgttggg gcccttaann ttccccagcg ttcccatttt ttnggcantt 360
tntgg 365

<210> 669
<211> 474
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (454)
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<220>

<221> misc feature
<222> (456)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (472)
<223> n equals a,t,g, or c

<400> 669
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agaaattgaa acctggcgca atagatatag taccgcaagg gaaagatgaa aaattataac 120
caagcataat atagcaagga ctaaccccta taccttctgc ataatgaatt aactagaaat 180
aactttgcaa ggagagccaa agctaagacc cccgaaacca gacgagctac ctaagaacag 240
ctaaaagagc acacccgtct atgtagcaaa atagtgggaa gatttatagg tagaggcgac 300
aaacctaccg agcctggtga tagctggttg tccaagatag aatcttagtt caactttaaa 360
tttgcccaca gaacctccta aatccccttg ttaatttaac ttgtnagtcc aaagaagaac 420
agctctttgg acactaagaa aaaaccttgt agananánta aaaaatttaa cncc 474

<210> 670
<211> 467
<212> DNA
<213> Homo sapiens

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<222> (217)
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<222> (219)
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<222> (229)
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<222> (287)
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<222> (305)
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<222> (398)
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<222> (405)
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<220>
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gaccgctctg agctaaacct anccccaaac ccactccacc ttactaccan acaaccttag 120
ccaaaccatt tacccaaata aagtatangc gatacaaatt gaaacctgnc ncaatacata 180
tactaccncc agggaaacat gaaaaattat naccnancnt aatatancna ggactaaccc 240
ctataccttc tgcntaatga attaactaca aataactttg cnacganagc ccaagctaan 300
acccnccaaa ccncacanct acctnanaac anctnnnaga acnccccntc tatgtaccna 360
ntactgngaa nattatacgt aaaggnacca acctaccnaa cctgntgata ctggttgtcc 420
acataaatct tattcccttt naatttgccc ccaaacctct taatccc 467

<210> 671
<211> 360
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (292)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (316)
<223> n equals a,t,g, or c

<400> 671
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taagaaagac cctaaaatgg atatagaagt gtgtgtgtat ccataaaatg catatgtaaa 120
tttttttttg tttttaagca ttcacccaaa caaaaaaatc acaggtaaac ccatgtttct 180
gagatgccat tattccaagc aaaataagag ataatccctt caagttaaat tgaaaatttt 240
cctgaaacca tacatttcaa gtgaaataag taattctaga tagggcaatt tnaattggat 300
aattttaaag tgtctnttat tgcagtggtt tatttgcaaa ttcctaaaag ggaaaatttt 360

<210> 672
<211> 237
<212> DNA
<213> Homo sapiens

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<222> (63)

<223> n equals a,t,g, or c

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<222> (75)
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<222> (112)
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<220>
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<222> (168)
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<220>
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<222> (170)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (210)
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<220>
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<222> (213)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (228)
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<223> n equals a,t,g, or c

<400> 672
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agncagccag gtttnctggg ggccaggctg ggtgtcctca caggagtagg gnctacaccc 120
aattccaaaa gcctgagaaa gagagaagtg gagggggagg cgagtttntn aataaaggct 180

cccatcaggt caaaaaaaaa aaaaaaaaan ttnggggggg gccccgnncc caattng 237

<210> 673
<211> 429
<212> DNA
<213> Homo sapiens

<220>
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<222> (240)
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<222> (385)
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<222> (387)
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<222> (426)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (427)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (429)
<223> n equals a,t,g, or c

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gtggctcgtt ccagacctca gaagcaccag aatacgttta gcttcaaaaa tgacaagttc 120
gataaaagtg tgcagaccaa gaaaattaat gcaaaacttc atgatggagt atgtcagcgc 180
tgtaaagaag ttcttgagtg gcgtgtaaaa tacagcaaat acaaaccatt atcaaaaccn 240
aaaaagtgtg ttaaatgttt acaaaagaca gtgaaggatt cttatcacgt aatgtgcagg 300
ccatgtgccc tgtgaacttg aagtttgcgc aaaatgttgg aagaaaggag accttgtatt 360
ccaatcctgg gccaaagaat ccagncncaa gagttggaag cttagaaagg agttccactc 420
aggggnntn 429

<210> 674
<211> 134
<212> DNA
<213> Homo sapiens

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<220>
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<222> (14)
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<222> (124)
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<220>
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<222> (127)
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agctcaggcn tgtccagcta caccccgaat cactctgtgg ccttcagcaa gtggcatgag 120
cagncgntgg agca 134

<210> 675
<211> 274
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
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<220>
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<222> (266)
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<400> 675
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aatatcacag acaccnctna cacaaggaat ataaaancca ccaccctnca gcctgggaga 120
acgtcgtnga gaacctacat ctatacanga ttttaaaaat gaagctgggc gtggtggtac 180
acacctgtgg tcccagctta ctagggnggc tgcagccagg tntgnacgct ccaanccagg 240
gcttagtggc tgcaatgagc tcttanttgg catc 274

<210> 676
<211> 416
<212> DNA
<213> Homo sapiens

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<222> (387)
<223> n equals a,t,g, or c

<220>
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<222> (393)
<223> n equals a,t,g, or c

<400> 676
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ctggtgaaat cagatccagg gactcaacaa ctgattctnt gnttctttct ttctctctcc 120
agagtcttct tcccaccctg ggcagggatg cacacggctg cagcgctggt gtcgggccaa 180
gcagatgggc ttggagcctc ccccagaggt gtggcaggtg ctgaagaccc accccggagg 240
acccccgctt ccagtgcagg tcagagacag gccgggaggg ctttcagggg agccagggcc 300

tttttncagg catgttcacc cngctgttcc tgacctgagg gagnaatggt tggagggttt 360
ggaagggcnt tgtttgaaca ggcaagnagt ttnttttgag gtggcctggt ttcagg 416

<210> 677
<211> 507
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<222> (464)
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<222> (473)
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<221> misc feature
<222> (479)
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<222> (487)
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<222> (495)
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tcacggctgg gcccccagag gagagaggag gccgacgnca gcggtncccg tncgggaacg 120
ggagggtttt cggggggttc ggcgtcgcac cttggggccc cccgcagccg tntaccgggc 180
ctcccatctg ctaagcnttt ttccgttgag ccgntccaaa aacactaagc tggggacgcc 240
aagtgccccc ccacccccggc tccctggccc tatccacaac ttcaacncca ncccaggatc 300

gccatctttt aggggaggcc tnggaagggg gtgttaaggt gtttttaggg ccaacgaggt 360
tnaaacaaaa aggacccttn cccannccaa ccannccaan cccnaattna nctncatgnc 420
ttaggggaaa aatttncnna acaatttncc ctttnnngga accngggcaa anncaaggna 480
agttttnggg gtttnaattg tttctta 507

<210> 678
<211> 122
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<220>
<221> misc feature
<222> (38)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (95)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (102)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
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<222> (114)
<223> n equals a,t,g, or c

<400> 678
ncanaaactc tggtccttct gtctggtggc acttaaantc ttttgtgcca taatgcaaca 60
atatggaggg aagattttat ggaaaaatgg ggatnctctt cntnaacccc aatnaattaa 120
gg 122

<210> 679

<211> 121
<212> DNA
<213> Homo sapiens

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<222> (62)
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<220>
<221> misc feature
<222> (101)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (106)
<223> n equals a,t,g, or c

<400> 679
acttcgtcng gaactcgnga tctccctttg ggatggcccg cccgcaggtn ccggnccgga 60
antcccgggt cgacccacgc gtccgctata ttattggaag naattntcct ctcacctcct 120
a 121

<210> 680
<211> 475
<212> DNA
<213> Homo sapiens

<220>
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<222> (5)
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<220>
<221> misc feature
<222> (83)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (122)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (130)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (137)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (178)
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<220>
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<220>
<221> misc feature
<222> (301)
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<220>
<221> misc feature
<222> (330)
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<220>
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<222> (399)
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<220>
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<222> (441)
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<222> (458)
<223> n equals a,t,g, or c

<220>
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<222> (463)
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caggctcagg gaccggccgc ggncccgtag tgtatttaac tcaaatgggt gatgaaaagg 120
tnctcttggn aaagtgnaaa actttagatg gaaattcttc agggaaaaga aacgaggnaa 180
ggaacaagag gagaaagcag agntaaaacg cttaaaaaat tctgatgacc gggattccaa 240
gcgggättcc cttgaggagg gggagctgag ngattcactg ccatggagat cacaataagg 300
nactccccgt atagaagaga agacttcatn ggnagacagn ggnggaagaa gttggtttct 360
ttggccatca aaccaccccg gcaaatgttn ttggaaagna aaagttcctt cccggaaagt 420
tgaaaagggg aaaggaaaat ntgggcttct ggcctttngc cgngggttcc agggg 475

<210> 681
<211> 421
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (349)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (377)
<223> n equals a,t,g, or c

<400> 681
gtagaattct gagcactcaa ctcatgtttg gcattttaaa gtaaaaacaa gtgtgacttc 60
gaggaccaaa gaaattgtca gctatacatt tatctttatg aactcattta tattcctttt 120
taatgactcg ttgttctaac atttcctaga agtgttctta taaaggtcta atgtatccac 180
aggctgttgt cttattagta aatgcaaaga aatgactttg tctgttttac tctagtcttt 240
agtacttcaa aattaccttt catatccatg atctgagtcc attgggggat tttaagaatt 300
gatgtattca atacacgttc aaaataaatg tttaatttag tatgagtang tagttcccga 360
agtggtccca ttaaatnata aaccatgtaa cttgtctgtg aaaaaaaaaa aaaaaacccg 420
g 421

<210> 682
<211> 118
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)
<223> n equals a,t,g, or c

<220>
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<222> (54)
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<220>
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<222> (57)
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<220>
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<222> (59)
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<220>
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<223> n equals a,t,g, or c

<220>
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<222> (101)
<223> n equals a,t,g, or c

<400> 682
nacctccacg tcctggtgtg tgagcctgac tggggtcgaa gaccagacag gacntgnant 60
ancctgctct gagcgagtga gatcctactg gatcatcatt nacctaaacc ccaagcag 118

<210> 683
<211> 485
<212> DNA
<213> Homo sapiens

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<220>
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<220>
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<222> (313)
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<220>
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<220>
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<220>
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<400> 683
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gcaggatccc cgcgtcctcg gtcgccgcgt ccacgtccct ctcgcgtccc cgcccggcgc 120
cacgccgcct cctctgggtt cggcctccgc gcggtgcagc gcantctcag gccgcgggac 180
aagcccgact taaatctctg caatggctaa cgaacttatc cttgtccgtg ttgacttggc 240
cacanattga ttatggaagg ctaggcgtga attcaattcc aacaatcaag gttatttcac 300
aatccccttt gangcaggca actgtaatgt cntccanant atttggtggc attgcccata 360
canattntac tgaatnantc cggaatgata ccaacatgtc ccaatctttt tngggaaact 420
tggacccctg gaatgtcttc tcctnatggt gaaanaaatc caaaaaaaaa aaaatgttnt 480
naatt 485

<210> 684
<211> 527

<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (401)
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<220>
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<222> (457)
<223> n equals a,t,g, or c

<220>
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<222> (479)
<223> n equals a,t,g, or c

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<222> (512)
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<220>
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<222> (520)
<223> n equals a,t,g, or c

<400> 684
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gcaactgcga gggtagcccg gggccgcttg gagtcgcccg gacctgagag gctgctgcac 120
tgggcctcag ccagccctcc ggatgctggt gctgccatcc ccctgccctc agcctctggc 180
attttcctcc gttgagacca tggagggccc tccccgtcgg acttgccgct ccccagaacc 240
tgggaccttc ctcctccatc ggattctccc caggctttca tcttcttcca aggcccaac 300
cactaacntg ctttattgga cattcagggt gttccctgac acagtggttg gtgggacgag 360
gagtcacaga ggggagccag gggccagtgg gggttccagg ncagaaaaat tggttacagt 420
tgcccgtgtg gtcaagggtc tttcgagtaa atgttcntaa ttttaaggga cacagcatna 480
accaattggg agttaaaagc cttcgnatgt gnaatttgtn gggaagg 527

<210> 685
<211> 125

<212> DNA
<213> Homo sapiens

<220>
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<222> (19)
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<222> (124)
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<220>
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<222> (125)
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<400> 685
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agcgtgcaag acagctgggt gtacagcgtc ctcgaaacca cgagnaagtg agcagatcct 120
ccgnn 125

<210> 686
<211> 534
<212> DNA

<213> Homo sapiens

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<222> (7)
<223> n equals a,t,g, or c

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<222> (88)
<223> n equals a,t,g, or c

<220>
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<222> (122)
<223> n equals a,t,g, or c

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<222> (199)
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<220>
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<222> (273)
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<220>
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<222> (276)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

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<222> (322)
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<222> (369)
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<222> (375)
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<220>
<221> misc feature
<222> (378)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (410)
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<222> (423)
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<220>
<221> misc feature
<222> (433)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (436)
<223> n equals a,t,g, or c

<220>
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<222> (454)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (502)
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<220>
<221> misc feature
<222> (508)
<223> n equals a,t,g, or c

<220>
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<222> (509)
<223> n equals a,t,g, or c

<400> 686
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tgtaagttac agacatttat gttttcanca acagtttata atagttacat ctcatacttc 120
anctattaca acagagagaa cattaaagta caaagaaaga cttcaaaaat gaggttactg 180
tgatgtatca taaaaggant taaaattcaa aatatcaaag acctcaccta tcggactaaa 240

cataaatctt aaaacctcct atggtcctct ganccnaaaa ttacaaaact tagcaactgc 300
ttaaaccnta ggaattaacg gntctgtgtt ttccaggtaa gaaaaacaaa aaatgctttg 360
gtaaactanc ccatnatnta gtttaaatgt ttctgccccg ttttgtatcn ctccttgaaa 420
ganagtatat aanttncagg ccagcatata tttnaaaaaa catctcccaa atttcattta 480
ctataggttt ctccaataat cntttacnnt tttaatccaa tgaaaaaaat tgat 534

<210> 687
<211> 308
<212> DNA
<213> Homo sapiens

<400> 687
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tttggacact aggaaaaaac cttgtagaga gagtaaaaaa tttaacaccc atagtaggcc 120
taaaagcagc caccaattaa gaaagcgttc aagctcaaca cccactacct aaaaaatccc 180
aaacatataa ctgaactcct cacacccaat tggaccaatc tatcacccta tagaaagaac 240
taatgttagt ataagtaaca tgaaaacatt ctcctccgca taagcctgcg tcagattaaa 300
acactgaa 308

<210> 688
<211> 676
<212> DNA
<213> Homo sapiens

<220>
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aataaatatt ttagtggaan aaaaaaaaan naaantnann nnaanannna aaatannaan 180
aagggcggcc gcnctaaagg atccaanctt acgttcgcnt gcntgcaacg tcatacntct 240
cctatnttgt cacctaattt cnatcccctg gccgtctttt tacaaccttc nngactgggn 300
aaatccnctn gcgttnccca acttaaaccg ccttgcaant acatcccctt ttcgccagct 360
nggcgttntt tctaaaaaag cccgcatccg atcncccttc ccaattagtt gcnnncccctt 420

taattggnna antggggacc cccctgtntt cggntccttt taatcttcgg nggggtggtg 480
nttgggttta ccctccacct ttgaaccttt atanttgncn atnnccccaa atcnccccgct 540
cctttccgct ttncttccct tncctttctc cctctctttc cnccgggtnt ccnccgttct 600
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ctagggaaag aggctcccct caggctctcc ttgnctagnn ccacacctgg cagagcctgt 180
cacccagcct agcnn 195

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ctgcggacac acgcaaaanc aactcccagc tctgtttgat gttactcgtt tcctcaacaa 180
gtnggcaaaa cagatatcat gctgaattcc gggggccctg tgantcaaaa tcacttcttt 240
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ttaaaaactt catctcctan agaggactgt ggctcggcct ganttgagtt tttttatgtt 180
tatgtgcaag cgcaatgaan aagaacaccc gccagactac catgaggatc aatnagcnag 240
atgctctctg caccccacac tcccatgaac cnaagaagat cttccnaatn tttttgatga 300
aggaaaaatt ntgccccctt tggtntcttc cncccntgtt ttnaanancc attttattcc 360
ngcttccncc ccccaaaaac ccccntnttn aatgcttcct ggcccancct taaaacctgg 420
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agncctgtgc tcgatggnag gggctcccag gccggcagcc cttgccanct tcctntgcca 180
agcctgntgc tgnagaacgg ttattgctga ggtgcccctg tccaggcctg ctaacnttgg 240
ccacanacac atatnangcc cttggcttac agcctnaacc tnggcttcac nnctgctggc 300
cancnagact gcttcntgnc agcattgatc ttgtgttnan caagtctcac tggcanagct 360
ggcattggag ggtgcttgtc cntggacttt gntcagaggc ctgtgncaga gtcagtttga 420
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<210> 694
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<213> Homo sapiens

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<212> DNA
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aacagtccta antagcngcc ctcaattgtg aaaaaattta ctttaaacta cattaggttg 180
tgaatgcngg ttttatcaga actatgtttt ttgttcagnt tatctgntca tatggataaa 240
tattggttgg gatgacttgg tgtctaatgt gtagtgctac ncacctaact tatggggccn 300
aaatagcatg tcctaatgct tgctgctgat ttaaacacat taaaggtact ttgcaggaaa 360
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gncata 426

<210> 696
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<212> DNA
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tcagtctttt tatagatata aatcaagtag gcattatgtt ttaaaagact gacaggtaat 120
tatatttggn aaacatttna tgcactaact ttaaagnaat tgaaaattca ggtggataaa 180
tagncttaca aaagan 196

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ctttaacatt ttcccctgga caagtgtgta tctgttctct ccattggcat ttctacttcc 120
agcctctggg ctcctgcttc tgcctcctgc ttaggaacct gtccccctgg ggtagcttca 180

caacaccttc aaacataggc agtcagaggn ncacccgaga agggnccttc ccacgtncag 240
gaccaaattt ctnccgggaa ttt 263

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agcacatggc aaagtttgat ttgcactccg ttcatttctg acacgttttg ctgcctccta 120
cctttctaag cgtcatgcaa attcgagaat ggagaaggac gctgccggtc cctgagcggt 180
gtggagaggg cggaaggtgg actccagcgc agcttgaggg gctgaggacg gaggctgcag 240
catctgtgtc gttctactga gcacgcttct ctgcctcgct cctgactcag cactttgttc 300
actggctcag cagttatgtt tacacatcat ttttatggtc ctgctttgta attcatgntt 360
gagatgggtg gccactgtac agatatttat tacgcttttc agactttctg aatagatttt 420
tttgaataaa catgggttta tgaaagtgna aaaaaaaaaa aaaaaggggg gcccttttan 480
aggatccaag tttacnacnc gggcntgg 508

<210> 699
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<212> DNA
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cccactatgc ttagccctaa acctcaacag ttaaatcaac aaaactgctc gccagaacac 180
tacgagccac agcttaaaac tcaaaggacc tggcggtgct tcatatccct ctagaggagc 240
ctgttctgta atcgataaac cccgatcaac ctcaccacct cttgctcagc ctatataccg 300
ccatcttcag caaaccctga tgaaggctac aaagtaagcg caagtaccca cgtaaagacg 360
ttaggtcaag gtgtagccca tgaggtggca agaaatgggc tacattttct accccagaaa 420

actacgatag cccttatgaa acttaagggt cgaaggtgga tttagcagta aactgagagt 480
agagtgctta gttgaacang gncctgaacg cgacacaccg ccgtaccctt ctcaggatac 540
ttcaaggacn ttactaaacc cctacgcatt atttgaggag acagtcgnaa catggnagtg 600
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tttttttaag gggggggggg gggggaaaaa aaagtaaang ggggggggng gggaancttt 120
tttttnnccn ccatcaaggg ggggaanttt anttttggg gtnaacaaac ccttgccccc 180
nggntnaccc cggggttccc cggggaaaaa ntttnccccc ggggggttcc ggnaanccct 240
tattgccngt tncccggggn ttttttnccc naaaaaaaac aaantttntt tccccttttg 300
nccnntttta acttgggccg cctttgccca aaagggcttt ggggggggcc naaagggtca 360
attnccccttg aancttgaaa ccggggaaaa gcttcaactt tggcattngg cccttnccgt 420
ggtccccact tgcaaacgtg gtcaantggg tgggaacctg aacttgccgt ctaaaaaaaa 480
acttgccaaa tattgaatga acantcaaaa aaaggtgggt gaaancaagc ctcngnaagg 540
cccccttcaa aaggcaatct tggcttacac ttaacaccaa ggtggtctnc ttttgacttt 600
naacaagnga acanccactt cttcancntt taacgcttgg ggcttgcant tgnccttcaa 660
ccaancactt ttgtcaaagc tcaattttct tgggtattaa caaaaccaaa attttggctt 720
acagcnaaca aagggtnggg tgggaancct caatgggncc ccaacaattg ggccctncca 780
aagggaa 787

<210> 701
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<213> Homo sapiens

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<222> (119)
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ttagaaataa agtgccattc tctgaaaaaa aaaaaaaaaa aaaaaaaang gggggcccnt 120
tttanngnac cca 133

<210> 702
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<212> DNA
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<221> misc feature
<222> (439)
<223> n equals a,t,g, or c

<220>
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<222> (445)
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tgcaacattt gacaaaacta accttgaata aggcccactg taatacgtag ctctcttaaa 120
tataacactt aggactagaa gattagaaac taccaatccc aactacgtaa taggaaaatg 180
taggatcaaa aggcccatgt atataagtac tgaccactgg gccataatgt tgcttctcag 240
gctatatgca gtcctttagt cagaagtcaa taggcctatt tattaatatt ttacagacca 300
tattacctgg attaccaggg actatctttg ctgcagagat caagggttaa gatctatggg 360
aagatactta tttttctgag gnccttatgc ctggcatata attaaagact cangagaatt 420
atgngaaatg ctttctggnt gcccnaa 447

<210> 703
<211> 349
<212> DNA
<213> Homo sapiens

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<220>
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<222> (311)
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<222> (322)
<223> n equals a,t,g, or c

<220>
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<222> (328)
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aataaacatt cctttctggt ggggaggttg taaatggggg agggtgtgca tgtgtanggg 120
cacgagttat atgggaattc tctgtacctt ctgttcaatt ttgctatgaa cctaaaactg 180
ctctaaaaaa taacctctgc tttaaaaagg tatntgtact ctatnatctt ttattagaaa 240
tctttgttgc tatttttaca tggaaaaata cnggatgaag tccttattcc cctanaataa 300
attatggaaa ntcaccattc cnagtttntg atggaatcct ggatgctcc 349

<210> 704
<211> 328
<212> DNA
<213> Homo sapiens

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<222> (302)
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<222> (305)
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<220>
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<400> 704
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cgtggagggg ggggcggccc gccggcgggg acaggcgggg gaccggctat ccgaggccaa 120
ccgaggctcc gcggcgctgc cgtatcgttc cgcctgggcn ggattctgac ttagaggcgt 180
tcagtcataa tcccacagat ggtagcttcg ccccattggc tcctcagnca agcacataca 240
ccaaatgtct gaacctgcgg ttnctctcgt actgancagg attaccatgg caacaacaca 300
tnatnagtan ggtaaaacta acctgtct 328

<210> 705
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<212> DNA
<213> Homo sapiens

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aggtatggtc taatggtaat aaacaaattt ttatataata agttttattt gtatgtaata 120
aattttatta tataaaaata agttttaata tatattatat aaaaagtttt aataaatacc 180
taatatatta tttaatatga taaaacttat attaaatgaa attttatgct gttctcttgt 240
caatctgtct tttgttatct tgctggtgtg cctgtcatgt gagggactgc aatctgatat 300
gcctattttc cacagtcaaa gcaattacaa gagaattgtt acaattaccc agttatgtca 360
agagattttt tttaattcac taaggtagag ataangagaa tgtattaaaa ataggatatt 420
ttaattataa atgcatnact ggngaagggg tattgntttt gaataaanat atngaggnta 480
tttngccatg accncanaaa aaacnnaagt tngaaaaaat cccctgggaa aatttaatgt 540
ntccttcnaa ctttttaaaa antaccctaa aaaaaatntt aatttggant taaaatcaat 600
atctccaatt aatcccnnaa ttctctttaa ataatccccc ttaaaataag gntacccctt 660
gaaata 666

<210> 706
<211> 267
<212> DNA
<213> Homo sapiens

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<222> (28)
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cnggtccccc ccgcnggnnc cgcccccggg gccgnggttc cggcggcgcc tcgcctcggc 120
cggcgcctan cagccgactt agaactngtg cggannaggg gaatccgact gtttaattaa 180
aacaaagcat cncgaaggcc cgcggcgngt gttgacgcga tntgatttct gcccagtgct 240
ctgaatgtca agttgnanaa attcaat 267

<210> 707
<211> 300
<212> DNA
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<222> (238)
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (274)
<223> n equals a,t,g, or c

<400> 707
cctccaccca cggccgggcc ttgacgtcat gggctgcggc cccctcccgg ctgaacctat 60
aaancggcag gtgcgcgcng ccctacagac gttcgcacac ctggntgcca gcnccccaaa 120
agtcccggga cagcccgaag cgccgcgccc gcagccccga nctccccaag nnttcgaaag 180
cggcgcacac tcccggtctc cactcgctct tccaacaccc gctcgtnttg gcggcagntc 240
gtgtcccaga naccganttg ccccagaaaa cganacgccg ccgctgcgaa ggaccaatga 300

<210> 708
<211> 282
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (50)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (239)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (262)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (272)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (275)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (279)
<223> n equals a,t,g, or c

<400> 708
ntttnnatag tccccaagct taatacgaan ccctataggg aaagctgaan acgcctgcag 60
gtaccgggtc cgggaattcc cgggtcgacc cacgcgtccg attacaagct gtagaccacc 120
taatatcaat ttgtaggtaa tgttcctgaa aattgcaata catttcaatt atactaaacc 180
tcacaaagta gaggaatcca tgtaaattgc aaataaacca ctttctaatt ttaaaaaana 240
aaaaagaaaa aaaaaaaaaa angggggggc cnccntaang gt 282

<210> 709
<211> 399
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (20)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (42)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (123)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (138)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (143)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (346)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (388)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (395)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (399)
<223> n equals a,t,g, or c

<400> 709
gctnttttat acgaagggcn cctaataggg gtttaaagct gnaaaacccc cctggcangg 60
tagccgcgaa ancgggaaat tcccgggggt cgaacccacg cgttccggga aaaagcttgc 120
canaaacagg gagaaganag ganagaaaaa gggggattag ttatatcaaa aagcctggaa 180
aggtgggaat ggaccaaaaa gatggggact cctcctttat tccaagcatg ggagggggtt 240
ttaaatggga gggatttcct ttttcctgcg acaaaacgtc ttttcacaac ttaccctgtt 300

aagtcaaaat ttattttcca ggaatttaat atgtacttta gttggnatta tctatgtcaa 360
tganttttaa gctatgaaaa tatatatnaa cttanagan 399

<210> 710
<211> 302
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (294)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (300)
<223> n equals a,t,g, or c

<400> 710
ggtgtaattc tgttagtttc agatttctct cctgtttttg caaattgtgg gaaagattga 60
caatgcaaat gtgtcaaaga catactgttg ggtgcaatat taacaatttt aaatgcaaat 120
ttctttggat aaattatttc tatattctgt aaatctgaga tttaatgtat attttgttta 180
aaaaatgatt tagtaaaatc tttgaaaagt aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 240
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaanaaaaan 300
aa 302

<210> 711
<211> 489
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (70)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (110)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (116)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (287)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (402)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (439)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (465)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (466)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (483)
<223> n equals a,t,g, or c

<400> 711
tangggaaat ttgaagctgg ttccctgcag gtcccctgca ggtaccggtc cggaattccc 60
gggtcgaccn acgcgtccgg gctccacgag ggttcagctg tctcttactn ttaacnagtg 120
aaattgacct gcccgtgaag aggcgggcat aacacagcaa gacgagaaga ccctatggag 180
ctttaattta ttaatgcaaa cagtacctaa caaacccaca ggtcctaaac taccaaacct 240
gcattaaaaa tttcggttgg ggcgacctcg gagcagaacc caacctncga gcagtacatg 300
ctaagacttc accagtcaaa gcgaactact atactcaatt gatccaataa cttgaccaac 360
ggaacaagtt accctaggga taacagcgca atcctattct anagtccata tcaacaataa 420
ggggttacga cctcgatgnt ggatcaagac attccgatgg tgcanncgct attaaagggt 480
cgnttggtt 489

<210> 712
<211> 121
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (74)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (88)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (93)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (94)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (119)
<223> n equals a,t,g, or c

<400> 712
gnattggggc ttcctttcga gggggccggg gactagggat cctgaccaca atgactgagc 60
ctgctacatg aagngcccca cgtaggtncg gannactttg acatcttggt acctaggana 120
c 121

<210> 713
<211> 476
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (337)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (420)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (436)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (463)
<223> n equals a,t,g, or c

<400> 713
ggagcaaaca tgttttttga accttgtcat ttttgtgaag aattgcctag attccttctc 60
tcatcaacgg gaaagtactt cctctgagag tgcgagtgca ccatgctcac tgttgctgcg 120
tgggagagtc acaagccact ggcaagcaag tggtatagtc tgtgaagcac tgcagcgagc 180
agcacctgga tcttgccttt ataagaacat tttactacct gcagctttga gtcttgccct 240
acattttggg catgacataa gatgtgtctt tattcagctc gtcgtgaaga tgctgctgct 300
gaatgggtca gcatatctct gtttgcatgg tttgcangaa gtcggttttc atggtcattc 360
agtttccaca gatcttgaat gattactggc tggctgggtc ttttttttcca tgagaaaatn 420
actggtgcaa aattgnccta taaaattggn ctttactnaa atnaccaatg gtttaa 476

<210> 714
<211> 527
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (79)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (80)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (414)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (415)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (419)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (462)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (483)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (497)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (516)
<223> n equals a,t,g, or c

<400> 714
ccctttgant ataccngaaa gctggttcgc ctgcaggtac cggtccggaa ttcccgggtc 60
gacccacgcg tccgcccann cccactccac cttactacca gacaacctta gccaaaccat 120
ttacccaaat aaagtatagg cgatagaaat tgaaacctgg cgcaatagat atagtaccgc 180
aagggaaaga tgaaaaatta tagccaagca taatatagca aggactaacc cctatacctt 240
ctgcataatg aattaactag aaataacttt gcaaggagag ccaaagctaa gacccccgaa 300
accagacgag ctacctaaga acagctaaaa gagcacaccc gtctatgttg caaaatagtg 360
ggaaagattt ataggtagag gcgacaaacc tacccgagcc tggtgatagc tggnntgtnc 420
aagataagaa tcttagttca acctttaaat tttggcccac anaaccctnt aaattccctt 480
ggnaaattaa ccggtangtc caagagggac caggtnttgg gacccct 527

<210> 715
<211> 511

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (23)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (54)
<223> n equals a,t,g, or c

<400> 715
gaaacccact ccaccttact acntgacaac cttagccaaa ccatttaccc aagntaaagt 60
ataggcgata gaaattgaaa cctggcgcaa tagatatagt accgcaaggg aaagatgaaa 120
aattatagcc aagcataata tagcaaggac taacccctat accttctgca taatgaatta 180
actagaaata actttgcaag gagagccaaa gctaagaccc ccgaaaccag acgagctacc 240
taagaacagc taaaagagca cacccgtcta tgtagcaaaa tagtgggaag atttataggt 300
agaggcgaca aacctaccga gcctggtgat agctggttgt ccaagataga atcttagttc 360
aactttaaat ttgcccacag aaccctctaa atccccttgt aaatttaact gttagtccaa 420
agaggaacag tctttggcac taggaaaaac cttgtagaag agagtaaaaa attaacaccc 480
atagtaggcc taaaagcagc accaattaag a 511

<210> 716
<211> 81
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (39)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (74)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (77)
<223> n equals a,t,g, or c

<400> 716
gggtggcatg aggangtccc acttgcaact tctttctgnt gagagaacct taggtacgga 60

gaagaataga gggnctnatg g 81

<210> 717
<211> 208
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (20)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (71)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (115)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (127)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (175)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (195)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (201)
<223> n equals a,t,g, or c

<400> 717
tnggtncata agcatcttcn tggaatcgta ttataaaatt gaaattagat atagagaatg 60
ttttaacact nntttaactc aaaatttgta atcattctta atancatctt tcttnatcaa 120
aagaaanagg aatttaatga caggcagaca ctcttttaaa acttattcac aaaanccaat 180
aactgcacaa aatgntatta nctgcctg 208

<210> 718
<211> 562
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (557)
<223> n equals a,t,g, or c

<400> 718
gcccacgcgt ccggcccagg ctgctcccta ccaggtgacg gagcgcgccg gggctgtggg 60
tgccaggggc tgagtgctag ggactcgtca tgagtgggga tcccccacgtt cctgtcactg 120
ctgtcaaaca gaaggtaaac agtcttatga atgtatttcc ttaggaaaac ttgtaaaaac 180
ttttattagg atatctattt aatactgaac tttggcctac tttgtgatag actataaaca 240
aattgaggaa atcactattt ctcacttctg tattttctca aaaataattt tgttacagag 300
ttcaatatac tgtgtaccat tgatcttcta ttgtgaaagc aaagaatttc atcaaaatat 360
tttaaattat gagtgaaaat tgtgtatgtt aattttgcag ctataatatt aatcaaattt 420
tgtgtaattc taatcacaaa atgacgtgcc ttaagtgccc ctccagctgt gggttggcag 480
tgtccggaca gggagggccc atcaccgaaa tcctgaatga ttactagacc aattctatta 540
aaaacatttc aaggcanaaa aa 562

<210> 719
<211> 579
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (400)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (470)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (501)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (530)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (534)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (555)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (578)
<223> n equals a,t,g, or c

<400> 719
gcaaacccac tccaccttac taccagacaa ccttagccaa accatttacc caaataaagt 60
ataggcgata gaaattgaaa cctggcgcaa tagatatagt accgcaaggg aaagatgaaa 120
aattatagcc aagcataata tagcaaggac taacccctat accttctgca taatgaatta 180
actagaaata actttgcaag gagagccaaa gctaagaccc ccgaaaccag acgagctacc 240
taagaacagc taaaagagca cacccgtcta tgtagcaaaa tagtgggaag atttataggt 300
agaggcgaca aacctaccga gcctggtgat agctggttgt ccaagataga atcttagttc 360
aactttaaat ttgcccacag aaccctctaa atccccttgn aaatttaact ggtagtccaa 420
agaggaacag gtttttggac ctaggaaaaa ccttgtgaag agagtaaaan tttaacaccc 480
tagtaggcct aaaagcagcc nccaattaag aaagcggtca agcttaacan ccantaccta 540
aaaaatccca acttntactg gacttcttac acccattng 579

<210> 720
<211> 403
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<400> 720

gctttaaatt tgcccacana accctctaaa tccccttgta aatttaactg ttagtccaaa 60
gaggaacagc tctttggaca ctaggaaaaa accttgtaga gagagtaaaa aatttaacac 120
ccatagtagg cctaaaagca gccaccaatt aagaaagcgt tcaagctcaa cacccactac 180
ctaaaaaatc ccaaacatat aactgaactc ctacacccaa ttggaccaat ctatcaccct 240
atagaagaac taatgttagt ataagtaaca tgaaaacatt ctcctccgca taagcctgcg 300
tcagattaaa acactgaact gacaattaac agcccaatat ctacaatcaa ccaacaagtc 360
attattaccc tcactgtcaa cccaacacag gcatgctcat aag 403

<210> 721
<211> 327
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (311)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (316)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (320)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (322)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (323)
<223> n equals a,t,g, or c

<400> 721
ggacacttct tcatctcacc cccccccgcc cccctctagg agagctggct ctgcagtggg 60
ggagggatgc agggacattt actgaaggag ggacatggac aaaacaacat tgaattccca 120
gccccattgg ggagtgatct cttggacaca gagcccccat tcaaaatggg gcagggcaag 180
ggtgggagtg tgcaaagccc tgatctggag ttacctgagg ccatagctgc cctattcact 240
tctaagggcc ctgttttgag attgtttgtt ctaatttatt ttaagctagg taaggctggg 300
gggagggtgg ngccgnggtn cnnttag 327

<210> 722
<211> 202
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (48)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (54)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (63)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (65)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (73)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (139)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (165)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (176)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (182)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (201)
<223> n equals a,t,g, or c

<400> 722

gctcgcgccc caggccggtg tacccccgca ctccgcgccc cggcctanaa gctntctctc 60
ccngntcccc ggnccggccc ccgtcccgcc ccgccccaga tccgctgggc cgccatggag 120
cgctggcctt gaccgtaang gcggcgcctg gctgctcgtg gctgnccgcg cgctgntgca 180
antgctgagc tcagacctgc nt 202

<210> 723
<211> 354
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (39)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (50)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (66)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (94)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (113)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (125)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (154)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (155)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (203)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (246)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (274)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (295)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (298)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (333)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (335)
<223> n equals a,t,g, or c

<400> 723
gggagaatcc atctaaagta aacagcccag cattgggan canctctttn gcaagttgga 60
ggcttnctgt ancgttaatt tcaggaaatc ctangcaaat atgcagttac tgntctagaa 120
gatanatagg tagtgtgtac tgtgatggaa attnnaatgt cactgttaaa aggtttgcat 180
tttgtgggct tggaagggcc tanaacttcc ttcttaggct ttctcttcac taagtgggct 240
cttgcnttat attacttcca gagaaaggca ggcnggatta gaggcatggt aaggnganca 300
atttggggaa atacctatac tgtgcaaaag agncnaagga caacctttta atgg 354

<210> 724
<211> 310
<212> DNA
<213> Homo sapiens

<220>
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<220>
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<220>
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<222> (217)
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<220>
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<220>
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<222> (297)
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<400> 724
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acggcgcgtg cgtcccggcc ccagggtccg gcagccccgc cggccgagcg cctccctgcg 120
gcctagccgg gcccggccgg gccggagcag nttcccacgg cccccacccg ntcgcctgcc 180
cgccgcctcg cgggtggggg cggngcgcgg gctccanccc cttttgaaat ttgagtctng 240
caaccagnaa gttcggaatc ccgagatacc ggatcctctg cgcaaaatgt tttctnncga 300
aggtgaaagg 310

<210> 725
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<212> DNA
<213> Homo sapiens

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<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
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<222> (65)
<223> n equals a,t,g, or c

<220>
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<222> (90)
<223> n equals a,t,g, or c

<400> 725
gcggacgcgn gggcgggcgg gcgggcggcc atgaggctcg ngcggcggng gcgggcgggg 60
taggncggcg ggcccgggga gggggcggn agggcatgt 99

<210> 726
<211> 208
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (64)
<223> n equals a,t,g, or c

<220>
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<222> (91)
<223> n equals a,t,g, or c

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<220>
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<222> (187)
<223> n equals a,t,g, or c

<220>
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<222> (204)
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<400> 726
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agtncccaac ctgggccctg ctgagcagga ncagaaccat tacctgccca gctgtttggc 120
tgtacggcga gaatggnacg ctgactgcaa ggggcttggc gcggttttcc acaacctgng 180
gctangncaa gttcaagggc ttcnactg 208

<210> 727
<211> 441
<212> DNA
<213> Homo sapiens

<220>
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<222> (321)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (394)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (405)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (422)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (433)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (438)
<223> n equals a,t,g, or c

<400> 727
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tgaacgaaac aagaaagaaa caaaacagaa gaggaatgaa aaagacataa tgatgtcatc 120
caagccaaca agccatgctg aagtaaatga aaccataccc aacccttacc caccaagcag 180
ctttatggct cctggatttc aacagcctct gggttcaatc aacttagaaa accaagctca 240
gggtgctcag cgtgctcagc cctacggcat cacatctccg ggaatctttg ctagcagtca 300
accgggtcaa ggaaatatac naatgataaa tccaagtgtg ggaacagcag taatgaactt 360
taaaagaaag aagcaaaggc actagggggt gatncagatc atggntggat tgatgccatt 420
gntttggaat tgntttgngt t 441

<210> 728
<211> 429
<212> DNA
<213> Homo sapiens

<220>
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<222> (95)
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<220>
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<222> (99)
<223> n equals a,t,g, or c

<220>
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<222> (149)
<223> n equals a,t,g, or c

<220>
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<222> (231)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (243)
<223> n equals a,t,g, or c

<220>
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<222> (264)
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<220>
<221> misc feature
<222> (284)
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<220>
<221> misc feature
<222> (290)
<223> n equals a,t,g, or c

<220>
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<222> (311)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (317)
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<220>
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<222> (327)
<223> n equals a,t,g, or c

<220>
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<222> (357)
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<220>

<221> misc feature
<222> (363)
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<220>
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<222> (397)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (403)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (416)
<223> n equals a,t,g, or c

<400> 728
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tgagtggatg aaggtgggta ttgggggtgg ctgtnaaana aaataatgga gaatcacttt 120
tctatacatc tacctatact taatctaana aacaaagtaa tctactgtaa agtactctgc 180
cccttgaaag aagtattaaa aagagtgagg atggatttaa aaaaaaacat naatttagaa 240
atnttcaaaa tggtttttgt gggnagattc ctattatgaa ttcncacatn tttaaagaat 300
gagaaacata nttattngtt aaaaatncca aaaacagttc ctgggttcct cttgttnttt 360
ganaactaaa aaaaatacca gagtgttgga atctccnaaa ccnatgaaat cccccnaaat 420
tttaaggac 429

<210> 729
<211> 260
<212> DNA
<213> Homo sapiens

<220>
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<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (53)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (54)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (57)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (89)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (103)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (104)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (120)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (150)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (188)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (195)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (251)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (256)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (259)

<223> n equals a,t,g, or c

<400> 729
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caaatgtttg ccagaattca cagtttagng catctaaatc canntatata gaaagcgctn 120
tttttctttt ctttcttttc tttttttttn ttttttttta agatggactc cacgttgcca 180
aggctggnaa tttgnttcct cttgatcaat ataaagacgt ttcaacatta ttgatctctt 240
tagagtttgg ntatantant 260

<210> 730
<211> 136
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (51)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (75)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (123)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (131)
<223> n equals a,t,g, or c

<400> 730
gcggancacc atatngaacg ggagacctgg tgactagaca tcaagcaang nactatgcac 60

caagaatata aaganggaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 120
aanaaaaaaa naaaaa 136

<210> 731
<211> 110
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (34)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (61)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (83)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (110)
<223> n equals a,t,g, or c

<400> 731
nccctagaac cccagccagg accgnggagg cccngaagac ccccatcaag gaggagctgg 60
nggcagggaa aacctacagg cgntgagaga gaggccgcag caagaagcan 110

<210> 732
<211> 639
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (222)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (247)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (361)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (387)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (457)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (514)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (577)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (579)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (588)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (607)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (639)
<223> n equals a,t,g, or c

<400> 732
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ggatctagat aaaagttttt aggctaaccc aaaatattta tcttcagtaa tgatatgcct 120
tttgctgtgt atgacatctg aaatgtggat aatactgaaa cgctctcagt cttaaactta 180
taagctacac taaaatctaa ttaatgaatt gctgtaaaag tngttgatta ttaatataag 240
ctgtagnttt taacttttta tctgctgcct cttgtgttca tttcctttta aaggtgattg 300
gtttctgttt gtcatcaaaa cataaaaacc ttaaaggagt cttacagatt ttttgtgctg 360
ntaggtggct tttcccttct ggctctnttt ttttaaacaa taattaataa ctaaaatatt 420
tatgtcttat tgaatatctt atggtataat aacatanttt atcttaaaat aatcaaatag 480
gatattcatg gatttttaga tctgtcttgt gagntgtgac agatttattc aataaacatt 540
tattgagtcc cctatcaact acttggtacc aaagaanana gatgaatnaa tcttggtctt 600
tcaaaangct ataggctatt gggggaaat agggatggn 639

<210> 733
<211> 380
<212> DNA
<213> Homo sapiens

<220>
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<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (44)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (306)
<223> n equals a,t,g, or c

<400> 733
gaattcattt tnttcttatt aaggaaatac tttgcataan gggnatcatt cccagagngc 60
tttaccaaaa ttctcttaaa taaaaataat agactcgcta gtcagtaaag atatttgaat 120
atgtatcgtg ccccctccgg tgtctttgat caggatgaca tgtgccattt ttcagaggac 180
gtgcagacag gctggcattc tagattactt ttcttactct gaaacatggc ctgtttggga 240
gtgcgggatt caaaggtggt cccaccgctg cccctactgc aaatggcagt tttaatctta 300
tctttnggct tctgcagatg gttgcaattg atccttaacc aataatggtc agtcctcatc 360
tctgtcctgc ttcataggtg 380

<210> 734
<211> 311
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<220>
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<222> (27)
<223> n equals a,t,g, or c

<220>
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<222> (61)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (92)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (128)
<223> n equals a,t,g, or c

<400> 734
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nccgggtcga cccacgcgtc cgcggacgct tnggttggtg gccaaggaaa ggtatatagt 120
aaaagttnta aaccatgtca actgaagtga gtgtaatctc agatatcaac attattatat 180
tttaaaatca cgctatggaa atatcacctg aattctgtca tttgtcagat ttacagtacc 240
ttttttctt taacttttag cattaaataa aaataaaatt gggagcactg aaaaaaaaaa 300
aaaaaaaaaa a 311

<210> 735
<211> 361
<212> DNA
<213> Homo sapiens

<220>
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<222> (173)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (219)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (308)
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<220>
<221> misc feature
<222> (314)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (327)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (331)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (343)
<223> n equals a,t,g, or c

<400> 735
gtaccgctgc cgccgtctct aaggtcgccc gggtcccacc gccgccacca tgcctcgggg 60
aagccgcagc gcggcctccc ggccagccag ccgccccgcc gcgccctctg cccacccgcc 120
cgcgcaccca ccgccctcgg cagccgcccc agccccсgcc ccttcgggcc agncggggct 180
catggctcag atggcgacca cggccgcagg ggtagccgng ggctcggctg tgggacacgt 240
catgggcagc gccctgaccg gagccttcag cggggggagc tcggagccct cccagcctgc 300
tgtccagnag gccnccaccc ccgctgnccc ncagcccctg canatggggc cctgcgccta 360
t 361

<210> 736
<211> 388
<212> DNA
<213> Homo sapiens

<220>
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<222> (38)
<223> n equals a,t,g, or c

<220>
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<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (53)
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<220>
<221> misc feature
<222> (64)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (109)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (153)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (161)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (164)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (169)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (170)
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<220>
<221> misc feature
<222> (187)
<223> n equals a,t,g, or c

<220>
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<222> (231)
<223> n equals a,t,g, or c

<220>
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<222> (237)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (265)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (296)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (345)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (378)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<400> 736
gtatccatag ttgctgctca gatgtttctt tttttcanag ttntgctgnt aanaatatct 60
cctnaacatt tgacttcatt gtggncaata atggtctctg aattgattna gacattcaca 120
cagcttgaag aaaatctaaa agatgaanat gantcattga naancaccnn caaagtaaac 180
agaattnaag tttcagtccc ggatgcaaat ggaccctcag tgggggagat nccccanagt 240
gaactcatct tgtatttatc agctngcaaa ttcttggaca cagcagcttt cttttncacc 300
tgacaagatg ccattatttc aaatttatac gngggcattt attcnagaag tggacacata 360
gggccctgtc ttctgttnat gtanagga 388

<210> 737
<211> 146
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (70)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (96)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (102)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (124)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (133)
<223> n equals a,t,g, or c

<400> 737
ggtaaatcaa agttttgggt ggaagtgttg anaagtatga gtttttttgtt gtttttgttt 60
tacttaaaan ttttaattta tccagaatgg cagtancttt ancaagcaga tggtcacaat 120

ctgntttcta aancattttt tattaa 146

<210> 738
<211> 101
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (46)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (67)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (99)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (101)
<223> n equals a,t,g, or c

<400> 738
ggtgagagnc tcatttctat gcacagtgtt tctgaggagg atgganctag atagctgtct 60
gttgtcntgt agcccaagct tgataatgga actatccang n 101

<210> 739
<211> 542
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (23)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (485)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (494)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (530)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (541)
<223> n equals a,t,g, or c

<400> 739
tanggtctcn agggncttct acnggaaacn ctcactatat tgaaagctgg taccccctgca 60
ggtaccggtc cggaattccc gggctaaata tgaaaataag tcatttgaaa aaaatacagt 120
atgtaaaatt tgttcattcg ttgaggtaat ggtgctatgt ttttacaaaa ttgttcctac 180
acctttttc tacttcaggt attttatttc aaccatttcc atcaattgaa ctgttaccat 240
tgcctttttc tgttgagaaa ttgcctctga aaaatagtgc tatttttcag cttaagtgtt 300
cttaagtgaa tgaaattttc aaagtactag atcaccttaa aattatttca cgtactgaag 360
acaattaagt ccgttatgtt tagagtagaa aatgtttagg ttaaagagca tctgtcaaca 420
gaatctacaa aaaagattcc cttgcatttg aattaagntc tctattctcc tattgctaaa 480
tgtgngatat atanagagga tgtataaaag gaaatggaaa tagactatgn acttggctgg 540
nt 542

<210> 740
<211> 184
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (77)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (78)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (107)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (122)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (138)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (171)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (175)
<223> n equals a,t,g, or c

<400> 740
aattcccnac tcnagtttag gctngtaccc ctgcaggtac cggtccggaa ttcccgggtc 60
gacccacgcg tccgtcnngc tccgctgcgg cgccccaact gctgatngag ctgctgggcc 120
tnagcgctct gctgcagnga gatcccagga agctggcaca tcttggaagg nccgncctgc 180
tcgg 184

<210> 741
<211> 231
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (167)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (170)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (173)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (176)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (225)
<223> n equals a,t,g, or c

<400> 741
gcccacgcnt ccgggccaga cgagcagagg acggcatcgg cctggacttg cctctttatc 60
cagcccaccc ccaggacttc catgaagtag aggacttgat aaagactgcc ataggcaaca 120
cactggtcca ggacatctga tattctccag atacccaaaa gctcctngtn cgnctnagtg 180
acgattacaa caggacgttt ctggagaacc tgaaagtgaa caccngagaa t 231

<210> 742
<211> 119
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (66)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (92)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (97)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (103)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (116)
<223> n equals a,t,g, or c

<400> 742
gctagttcta gatcgcgagc ggccgccctt tttttttttt tttttttttt tttttttttt 60
ttttcnttta tacttttgtt tatttttcct gnttatnaaa acngccaaca attgcnttt 119

<210> 743
<211> 580
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (264)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (338)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (366)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (369)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (385)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (396)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (443)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (499)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (515)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (540)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (562)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (563)
<223> n equals a,t,g, or c

<400> 743
gtcggttttt tattttttta caatttcact tagtctgtac ttcatcattt tgacagcatc 60
ttcctccctc ctttaattaa tggaatcttc tgaattttcc ctgaatgttt aaagatcatg 120
acatatgact tgatcttctg ggagcaggaa caatgactac tttttctggt gtgttaacat 180
gtcgctagcc agtgctccag gcacccagct ttgtctgtgg gttagtattg gtgtatgtat 240
gagtatctgt atgtatatat acanggtatt tatagagaga gactatcctg gagaagcctc 300
gttttgatgc cattcttcct tgcaaggtta agcaaggngg gtggaaacta agacacctga 360
accctncang gccttccgca tcaangtcag catgangaca gaccacagag ctgcactttt 420
gctccgaagc tacttttcac tgncccgttc aatctgantg ctgccacaac cagtcagggc 480
cgtcacagag agggagagnt gagaaagaag tcttnctctt tattgagttc caagactacn 540
accaattaca ctggcttttg annccgtgat cctgatccaa 580

<210> 744
<211> 225
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (210)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (213)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (217)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (220)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (224)
<223> n equals a,t,g, or c

<400> 744

cgaacaagac atgaaaagag nggtgacaaa tcaagaataa acactggttg tagtcagttt 60
tgtttgttga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 120
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 180
aaaaaaaaaa aaaaaaaaaa aaagggggggn ccngttnaan gggnc 225

<210> 745
<211> 338
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (56)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (62)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (175)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (316)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (321)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (336)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (338)
<223> n equals a,t,g, or c

<400> 745
nagctggtac gcctgcaggt accggtccgg aattcccggg tcgacccang cgtccntnaa 60
antaaagggg ctacagaaac actcattttt atgctgttcc ctcttgggct tcatgcaaag 120
acaattctgt gtaaatgtac agttgactct gatttggaaa tatgaaaatc agtcnatcct 180
tgttataaaa aattttttta caattgtaat tatattgatg ttcatattgt gtaaaataac 240
tcatttaata aaatagtact ttgatttacg acaaaaaaaa aaaaaaaaaa aaaaaaaaaa 300
aaaaaaaaaa aaaaanaaaa naaaaaaaaa aggnangn 338

<210> 746
<211> 160
<212> DNA
<213> Homo sapiens

<400> 746
ggtttcagtt gagccctgga actcctaaac ctttgcccct ggggcttcca tcccaaccag 60
tgccaaggac ctcctcttcc cccttccaaa taataaagtc tatggacagg gctgtctctg 120
aagtactaac acaaggaaaa aaaaaaaaaa aaaaaaaaaa 160

<210> 747
<211> 218
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (178)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (198)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (204)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (213)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (218)
<223> n equals a,t,g, or c

<400> 747
ggaaaaaatg cattgtcaac ggaatctttt atgtttgttt gtcttccttt aagcaacatt 60
gccttacttg ttataaaaga taaataaata tttgttcatt tcaaaaaaaa aaaaaaaaaa 120
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaangg 180
gcggccgttt taaaggancc aagnttacgt acncgtgn 218

<210> 748
<211> 265
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (52)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (53)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (77)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (80)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (82)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (106)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (107)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (121)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (127)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (150)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (153)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (159)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (161)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (175)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (186)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (207)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (208)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (258)
<223> n equals a,t,g, or c

<400> 748
gctgttactt angaaaatgg aacacaanaa aagtaaagaa naaagaatga cnnacacatt 60
taagatctga ttggacncgn angataatcc tgagaattgc taatanntca ctgggtttgg 120
nccttantgt tgacttcagt atgctgagan ggngaccanc ncgcctagag ctaangcttg 180
atgacnttga agagtttgag aacattnnaa aggacctgga gacccgtaag aaacagaagg 240
aagatgtgga agttgtanga ggcaa 265

<210> 749
<211> 156
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (92)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (107)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (132)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (146)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (156)
<223> n equals a,t,g, or c

<400> 749
gtctgaaagg aggaattttc attttccttt aaagtgaaaa ggtaaaaact gcatttacta 60
aaccaggccg gtgggggctc tgtgagcccc tntgcacagg aagcctnaga gactctgcat 120
ggtgttcccg gngcatcctg gccaangtgg gagaan 156

<210> 750
<211> 174
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (155)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (159)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (164)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (165)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (173)
<223> n equals a,t,g, or c

<400> 750
ggtcatgcac tcctacactt aaagaataaa ctatgttcta actgccacaa aaaaaaaaaa 60
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaata aaaaaaaaaa aaaaaaaaaa 120
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaangggng gccnntttaa agna 174

<210> 751
<211> 74
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (42)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (44)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (67)
<223> n equals a,t,g, or c

<400> 751
ccagtcctca cccatggcat gccccctgcg atcaggccat tnnnctcctc gtggtcatct 60
tccacangta ctcc 74

<210> 752
<211> 210
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (88)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (155)
<223> n equals a,t,g, or c

<400> 752
gctctaagtc acgggaactg cccttgctac ttgtgacctg ccctttactc agcagttttt 60
gttctgggaa gccctgggat tctgctanta cctatcactg taggtgctga agggaaacag 120
atgaaaacat gacctcaagg agcttctgta atganaaacc aagctgcgct ggaaagattt 180
aaaggacctg aactgtcttg actctttgat 210

<210> 753

<211> 313
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (310)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (312)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (313)
<223> n equals a,t,g, or c

<400> 753
ggtgagtgtc atttttaaga acagttgtag cccttctgat tattgcagta gctgtagaag 60
tatgtaagaa tatgtgatgg gtgtagtcat tagcaaagca tttaaatcac ttgagtattt 120
tgtcatggtt cattattatt aaagcacaaa ataacctatt gttagaaaat atgtgttttt 180
ataaatgaat gtaaaataat taaatgaatt gtgaaatgga tgtttaagaa aatataggct 240
taaaaagtaa atctataaaa tgatgtctta aaacagccat atcatgaaaa attctactta 300
gctatattan tnn 313

<210> 754
<211> 445
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (83)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (84)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (86)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (93)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (96)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (97)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (102)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (108)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (113)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (116)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (126)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (128)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (142)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (157)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (160)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (165)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (181)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (198)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (210)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (211)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (214)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (248)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (283)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (299)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (345)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (355)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (421)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (429)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (444)
<223> n equals a,t,g, or c

<400> 754
cngnggcang ggggaaaccc agggancagc gatgggctgc atggttgcat cagggctcct 60
gacaggattg gccgaggtcc tcnngntgct gtngcnnacc cnacagcnag gcnacnttca 120
ataccnangg tttcgggtcc anctggaatc catgaanaan ctgantgacc tggaggcaca 180
ntgggcaccc agccccncc tggaagcccn naancttctg gccgccgtgt gccaccaccc 240
tgctctgnct ctgagatagc cctgggtacc ctgagcccac canggacacc tcgccccttna 300
gcccaccacc ctggcaggct ttcatccccg tccatgctca agannggtcc ctggncacca 360
tggncattac caccccttcag ggcctgagca gctggatctg gtacaaagca atcggacata 420
nagttggang gggaagcccc tgang 445

<210> 755
<211> 531
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (527)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (528)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (529)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (530)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (531)
<223> n equals a,t,g, or c

<400> 755
ggagccaaag ctaagacccc cgaaaccaga cgagctacct aagaacagct aaaagagcac 60
acccgtctat gtagcaaaat agtgggaaga tttataggta gaggcgacaa acctaccgag 120
cctggtgata gctggttgtc caagatagaa tcttagttca actttaaatt tgcccacaga 180
accctctaaa tccccttgta aatttaactg ttagtccaaa gaggaacagc tctttggaca 240
ctaggaaaaa accttgtaga gagagtaaaa aatttaacac ccatagtagg cctaaaagca 300
gccaccaatt aagaaagcgt tcaagctcaa cacccactac ctaaaaaatc ccaaacatat 360
aactgaactc ctcacaccca attggaccaa tctatcaccc tatagaagaa ctaatgttag 420

tataagtaac atgaaaacat tctcctccgc ataagcctgc gtcagattaa aacactgaac 480
tgacaattaa cagcccaata tctacaatca accaacaaga aaaacannnn n 531

<210> 756
<211> 540
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (493)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (496)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (497)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (498)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (532)
<223> n equals a,t,g, or c

<400> 756
ngttgcgttg cggaccgcga gctgcactgc ttcctgccca agcccaagct cctcgcagca 60
gtaggggaca agatgccaac tggcaagcag ctagctgaca ttggctataa gaccttctct 120
acctccatga tgcttctcac tgtgtatggg gggtacctct gcagtgtccg agtctaccac 180
tatttccagt ggcgcagggc ccagcgccag gccgcagaag aacagaagac ctcaggaatc 240
atgtagaact gggggctttt ttctcctgag cagagaggcc caaggcatgc tgtggagaga 300
cttcacctgc caccatttcc aggtcaacag gactagagcg ttgatggttt tcaaaccctg 360
ttggaagaaa gtgcccatgg tttctctggt tctgccagtt tgacaagttt atggaggctt 420
ttgaatcgta atagcaatgt gagggtgagg gacaccctac agacattaaa taatttgctg 480
gtgaaaaaaa aanaannnaa aaaggggcgg gccggtttta aaagatccaa anttacgtac 540

<210> 757
<211> 560

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (414)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (435)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (505)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (528)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (539)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (549)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (553)
<223> n equals a,t,g, or c

<400> 757
gaaattattc ccaagaatac cttacttggt tcaaaagcag actgtttctc ttcatttcat 60
ctcaaatcag acttctgggc aagatgttct ttagagtaag caaacctaca acctaaaaat 120
ctcttcaaga ggcatctctg gtcttgtgac gagacctctt caaaaaccca cagtaaaact 180
cccctccctc cagttggcca ccagtctgcc accaaacatg aacaaattct gctgctaatc 240
ggtttccctt gtgatctggt tcctgaggtc ttcggatctg tgcaatgaat tatttattgt 300
tttattaaac cgacagtggt gtcccagaga ggaaccataa ataaaatgga aatctggtgc 360
tgtgataaag taataactag cattaatgag acctggtttt cctttcagaa aggncagtat 420
acctgtaaca aaggntaaag caatttatat ttaatttgca ttctgatggt aacatttaaa 480
cagcaattct aacaaaaatg catcnagtct aattcttacc tctatcanaa aacaactgna 540
taaaatttnt ganccacctt 560

<210> 758

<211> 155
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (52)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (84)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (117)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (140)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (143)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (149)
<223> n equals a,t,g, or c

<400> 758
gattcntana agtatgagaa gaattatnct tattgaccat taatgtcatg tncattttaa 60

tgtaatataa ttgagatgaa atgntctctg gttggaacag actctctctt tattttnttg 120
caatctttaa gaatacatan atntaaaant catta 155

<210> 759
<211> 80
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (45)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (52)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<400> 759
ggcggtaagt gcggtgcagt attcaactga ccggtggacn cagancttna gncatgangg 60
taacaggcat ctttcttctc 80

<210> 760
<211> 286
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (60)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (61)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (80)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (124)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (131)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (151)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (160)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (164)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (180)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (184)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (189)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (220)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (240)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (259)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (282)
<223> n equals a,t,g, or c

<400> 760
tntggaaagc tgttccgcct gcaggnaccg gtccggaatt cccgggtcga cccacgcgtn 60
ntaactctgt cttgacgcgn ggactgcctg gcacatagta ttcattctct tccctttaac 120
atanaagtgt ncagctgcgt acagtctntc naccagcaan tgtnaacgaa cctgtgcctn 180
taanaagcna ttctaaacca cctatgagta tttcttttan ggctcactta aatacatgtn 240
tgtatattct gtattctant cagaataatc tatatctgat cnaggt 286

<210> 761
<211> 207
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (30)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (55)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (89)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (91)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (96)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (122)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (171)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (188)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (198)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (204)
<223> n equals a,t,g, or c

<400> 761
ggaactttag tattaaatca gttntcaatn tcattgttta tgtattgttt tactnctttt 60
tattcatacg taaaattttg gattaattng ngaaantgta attataagct gagaccggtg 120
gntctcttct taaaagcacc atattaaatc ctggaaaact aaaaaaaaaa naaaaaaaaa 180
aaaaaaanaa aaaaaaanaa atgnaaa 207

<210> 762
<211> 162
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (23)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (61)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (78)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (82)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (123)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (132)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (140)
<223> n equals a,t,g, or c

<400> 762
catgggaccc ctctcagccc ntncctgcag attgcatgtc ccctggaagg aggtcctgct 60
nacagcctta cttgtaanct tntggaaccc acccaccact gccaagctca ctattgaatc 120
cangccattc antgtcgcan aggggaagga ggttcttcta ct 162

<210> 763
<211> 340
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (50)
<223> n equals a,t,g, or c

<400> 763
tntaataatc aacaccctcc tagccttact actaataatt attacatttn gactaccaca 60
actcaacggc tacatagaaa aatccacccc ttacgagtgc ggcttcgacc ctatatcccc 120
cgcccgcgtc cctttctcca taaaattctt cttagtagct attaccttct tattatttga 180
tctagaaatt gccctccttt tacccctacc atgagcccta caaacaacta acctgccact 240
aatagttatg tcatccctct tattaatcat catcctagcc ctaagtctgg cctatgagtg 300
actacaaaaa ggattagact gaaccggaat aaaaaaaaaa 340

<210> 764
<211> 354
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (318)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (343)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<400> 764
aatcaacacc ctcctagcct tactactaat aattattaca ttttgactac cacaactcaa 60
cggctacata gaaaaatcca ccccttacga gtgcggcttc gaccctatat cccccgcccg 120
cgtccctttc tccataaaat tcttcttagt agctattacc ttcttattat ttgatctaga 180
aattgccctc cttttacccc taccatgagc cctacaaaca actaacctgc cactaatagt 240
tatgtcatcc ctcttattaa tcatcatcct agccctaagt ctggcctatg agtgactaca 300
aaaaggatta gactgaancc gaataaaaaa aaaaaaaaaa ccnngggggg gggc 354

<210> 765
<211> 443
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (99)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (160)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (298)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (306)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (317)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (357)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (377)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (386)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (390)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (398)
<223> n equals a,t,g, or c

<400> 765
nttttaataa tcaacaccct cctagcctta ctactaataa ttattacatt ttgactacca 60
caactcaacg gctacataaa aaaatccacc ccttacgant gcggcttcga ccctatatcc 120
cccgcccgcg tccctttctc cataaaattc ttcttagtan ctattacctt cttattattt 180
gatctaaaaa ttgccctcct tttaccccta ccatgagccc tacaaacaac taacctgcca 240
ctaatagtta tgtcatccct cttattaatc atcatcctac cctaattctg gctatgantg 300
actacnaaaa ggattanact gaaccgaata aaaaaaaaaa aaaaaaaaaa atcccanggg 360
gggcccggtc cccattnccc cctatnttan ttttttttnaa aatccctggc cgcgttttaa 420
actttttttat tggaaaaaaa aca 443

<210> 766
<211> 351
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (337)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (345)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (347)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (350)
<223> n equals a,t,g, or c

<400> 766
gattttaata atcaacaccc tcctagccnt actactaata attattacat tttgactacc 60
acaactcaac ggctacatag aaaaatccac cccttacgag tgcggcttcg accctatatc 120
ccccgccccgc gtccctttct ccataaaatt cttcttagta gctattacct tcttattatt 180
tgatctagaa attgccctcc ttttacccct accatgagcc ctacaaacaa ctaacctgcc 240
actaatagtt atgtcatccc tcttattaat catcatccta gccctaagtc tggcctatga 300
gtgactacaa aaaggattag actgaaccga ataaaanaaa aaaanannan a 351

<210> 767
<211> 511
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (389)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (398)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (421)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (435)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (447)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (455)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (508)
<223> n equals a,t,g, or c

<400> 767
ggtttctcgc agaccctata acataatcca taattccttt tatggctcct attaattacc 60
tcattatttt aagtatgttt taaaggactg tatttgacta atgggttccc tttaactgaa 120
cttgttttta tttctgatct aacacccctt ttaaatggat caagccaaga cagaatgttt 180
gtgacaacgg tgcttgagat tgaacaactt ttggcaaggg taggtgtttt aaaggactct 240
atttaagtaa tgggtttcct ttaactgaac tttttagttc tgatctaaca ccccttttaa 300
atggatctgc caagacagaa tgtttttgac aatggtgatt gatactgaac agcttttggg 360
caagcgttaa gtgcttcctg ctaaatggnt attttgcnaa ttaatgtgtt ctccttaaat 420
ngatcctgga ttatnttaaa acgactnttt aattnattta ccatccatcc aaaatttccc 480
cccagcccct aatttgataa acctcccngt c 511

<210> 768
<211> 490
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (66)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (338)
<223> n equals a,t,g, or c

<400> 768
ctgnaagcna gacaccaacc ctcactaaag ggaacaaaag ctggagctcc accgcggtgc 60
ggccgntcta gaactagtgg atcccccggg ctgcaggaat tcggcacgag ggcagctcgg 120
actggtcata cggccttgag aagggtagtc tcgggatgcc gtccgaagtc ggcgacaggg 180
ccggggcgca ggcgcccgtg cggaatggca gatatttagc ttcctgtggt atactgatga 240
gcagaactct tccactacat acctcaattt tgcctaagga gatatgtgca cgaactttct 300
tcaaaatcac tgcaccatta ataaacaaaa ggaaaganta ttcagagaga agaattttag 360
gatattcaat gcaggaaatg tatgatgtag tatcgggagt ggaggattac aagcattttg 420
ttccttggtg caaaaaatca gatgttatat caaagagatc tggatattgt aaaacaagat 480
tagaaattgg 490

<210> 769
<211> 399
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (137)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (225)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (242)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (246)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (261)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (276)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (329)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (353)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (358)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (362)
<223> n equals a,t,g, or c

<400> 769
ggcacgagag cgcttgggga tggatgccct ggttgctgaa gaggaggcgg aagccaaggg 60
gaatgaagtg aggcccagtg gccgggtctt cttgagttcc gcagcactta gacttacgtg 120
cacctttca tcaggtncag gccccagttg tcaacccttc cagaacattt tcccatggat 180
tttgcggtat ttgacttttc aagattcaag agtcttaata atccngttgg gcaatttttg 240
gnaaanttgg acccagtcaa ngtttttaaa attccntccc caaggccttc cagccttggg 300
gggttccaag gttttcccga agggcccant cntaccagct ccttttttta aanggcgnat 360
anccagttga gcatatgact attgtttccc aattaccag 399

<210> 770
<211> 582
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (529)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (553)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (573)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (578)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (579)
<223> n equals a,t,g, or c

<400> 770
gtccacncgt ccgcccacgc gtccgcccac gcgtccggcg gagttgcagc gcctggtggc 60

cgccgagcag cagaaggcgc agtttactgc acaggccacg tgcccgtaga aaagatactc 120
atccactgtg ggttttggtt tcgccgtcac cccactgcct cactggattg tgaggatcat 180
atgcgacaat gtatttgaaa acgactagaa cattatcgga ggaaggtgga ctctgaagta 240
gtcgctgtag actatggatg tagaacaagg gtttggagcc cttcggacat ggttctaacg 300
cggcctgact tcttgctggc tacatgacct tggactacat aatcacgcct cttaaatggg 360
aggtgatgac agctatcctt gaggacctta gagagaactg atttcttagt acccagcctc 420
acaaatagtg catcacttca tggagttatg ttgggataaa tgtgtggaga agccagggaa 480
tcgcctagac tctcgcactg aaaattgtct ctccagctgt gtagaccgnt tcattgacac 540
cactcttgcc atnacccagt cggtttgccc canattgnnc ca 582

<210> 771
<211> 452
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (66)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (389)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (395)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (432)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (438)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (450)
<223> n equals a,t,g, or c

<400> 771

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gtggaggaat tgcanaagct ggaagtggtc atatgaacta cattcaagta acacctcagg 60
aaaaanaagc tatagaaagg ttaaaggcat taggatttcc tgaaggactt gtgatacaag 120
cgtattttgc ttgtgaaaaa aatgagaatt tggctgccaa ttttcttcta cagcagaact 180
ttgatgaaga ttgaaaggga ctttttata tctcacactt cacaccagtg cattacacta 240
acttgttcac tggattgtct gggatgactt gggctcatat ccacaatact tggtataagg 300
taataaattg ttgggggtgg ggaaggaagg atctaggata caggcaggat aatacatgca 360
ttctctccat tacaatccgc actcccacnt gtgtnaatat tacaccaaat cactttgcag 420
tcttattctc tntaaacnta gtacttcctn gt                                452
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<210> 772
<211> 631
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (298)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (380)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (451)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (552)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (559)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (610)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (611)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (614)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (631)
<223> n equals a,t,g, or c

<400> 772
ggagggacta accccccagg agatctgcga caagtaccac atcatccaga gccttggtct 60
ctgttgctgt accatactca tctgtcccac acagatagag ggtgttccac tggcggaggg 120
actaaccccc caggagatct gcgacaagta ccacatcatc catgctgaca tctaccgctg 180
gtttaacatt tcgtttgata tttttggtcg caccaccact ccacagcaga ccaaaatcac 240
ccaggacatt ttccagcagt tgctgaaacg aagttttgtg ctgcaagata ctgtggganca 300
actgcgatgt gagcactgtg ctcgcttcct ggctgaccgc tttcgtggaa ggcgtgtgtc 360
ccttctgtgg ctatgaagan gctcggggtg accagtgtga caagtgtggc aagctcatca 420
atgctgtcga gcttaagaag cctcagtgtt nagtctgccg atcatgccct gtggtgcagt 480
cgagccagca cctgtttctg gaactgccta agctggagaa gcgactggag gaatggttgg 540
ggaggacatt gnctggcant gatggacacc aatgcccagt ttatcacccg ttcttggctt 600
ccggatggcn ncanccacct gcttaaccga n 631

<210> 773
<211> 631
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (501)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (583)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (589)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (595)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (596)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (631)
<223> n equals a,t,g, or c

<400> 773
ngtggattta cttgtcgaca aaaggcatct cttaattggc acatgaagaa acatgatgca 60
gactccttct accagttttc ttgcaatatc tgtggcaaaa aatttgagaa gaaggacagc 120
gtagtggcac acaaggcaaa aagccacccct gaggtgctga ttgcagaagc tctggctgcc 180
aatgcaggcg ccctcatcac cagcacagat atcttgggca ctaacccaga gtccctgacg 240
cagccttcag atggtcaggg tcttcctctt cttcctgagc ccttgggaaa ctcaacctct 300
ggagagtgcc tactgttaga agctgaaggg atgtcaaagt catactgcag tgggacggaa 360
cgggtgagcc tgatggctga tgggaagatc tttgtgggaa gcggcagcag tggaggcact 420
gaagggctgg ttatgaactc agatatactc ggtgctacca cagaggttct gattgaagat 480
tcagactctg ccggacctta ntggacagga agacttgggg catgggacag ctcagacttt 540
gtatttaaaa gttaaaaagg acaaataaaa aaaaaaaggg gcnggccgnt tctannagga 600
tccaagcttt acgtaccccg ttgcaatgcc n 631

<210> 774
<211> 101
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (69)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (98)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 774
Gln Asp Glu Leu Gln Glu Glu Ser Glu Met Ser Glu Lys Lys Ser Cys
1 5 10 15

Ser Ser Ser Pro Thr Gln Ser Glu Ile Ser Thr Ser Leu Pro Pro Asp
20 25 30

Arg Gln Arg Arg Lys Arg Glu Leu Arg Thr Phe Ser Phe Ser Asp Asp
35 40 45

Glu Asn Lys Pro Pro Ser Pro Lys Glu Ile Arg Ile Glu Val Ala Glu
50 55 60

Gly Phe Thr Trp Xaa Ser Asn Pro Leu Lys Trp Ser Val Ala Asp Val
65 70 75 80

Val Arg Phe Ile Arg Ser Thr Asp Cys Ala Ser Ile Ser Lys Asn Ile
85 90 95

Pro Xaa Pro Gly Asn
100

<210> 775
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (49)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 775
Ala Ala Arg Ala Ala Arg Glu Ala Leu Leu Gly Trp Gly Thr Asp Cys
1 5 10 15

Pro Pro Phe Leu Met Cys Val Val Ser Leu Cys Cys Gly Ile Asp Met
20 25 30

Asp Ala Arg Thr Thr Leu Glu Thr Gly Val Ala Ser Arg Ala His Arg
35 40 45

Xaa Arg Glu Glu Gly Ala Ile Thr Gly Cys Gln Pro Leu Pro Gly Leu
50 55 60

Gly Ala Leu Ser His Gly Pro Ala Pro Ser Trp Val Phe Ile Leu Tyr
65 70 75 80

Leu Leu Gly Asp Arg Arg Arg Gly Ile Leu Pro Gly Trp Asp Lys Pro
85 90 95

Leu

<210> 776
<211> 146
<212> PRT
<213> Homo sapiens

<220>

<221> SITE
<222> (21)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (77)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (88)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (104)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (121)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (125)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (126)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (140)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (143)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 776
Phe Gly Arg Glu Ser Cys Ser Val Arg Thr Gln Arg Glu Pro Trp Lys

1 5 10 15

Pro Gln Arg Ile Xaa Xaa Pro Pro Ala Thr Leu Ala Pro Arg Tyr Tyr
20 25 30

Arg Arg Asn Cys Val Asp Ala Phe Pro Asp Thr Leu Ser Leu Ser Pro
35 40 45

Gly Glu Arg Ala Thr Leu Ser Cys Arg Thr Ser Gln Ser Val Gly Ser
50 55 60

Asn Phe Leu Thr Trp Tyr Glu Gln Lys Ser Gly Gln Xaa Pro Arg Leu
65 70 75 80

Leu Met Phe Gly Asn Ser Arg Xaa Pro Leu Ala Ser Gln Thr Gly Ser
85 90 95

Val Ala Val Gly Leu Gly Gln Xaa Ser Leu Ser Pro Ser Ala Asp Trp
100 105 110

Arg Leu Lys Ile Leu Gln Cys Ile Xaa Val Gln Gln Xaa Xaa Phe Arg
115 120 125

Ser Thr Met Phe Gln Phe Trp Ala Arg Gly Pro Xaa Leu Glu Xaa Lys
130 135 140

Asp Cys
145

<210> 777
<211> 201
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (12)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (21)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (47)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (175)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (186)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (187)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 777
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Arg Ser Gly Ser Gly Ser Lys Ile Lys Ser Arg Xaa Leu Gly Val Pro
  1               5                  10                  15

Arg Arg Ser Gln Xaa Ser Glu Gly Cys Pro Ala Thr Pro Ala Gly Ala
             20                  25                  30

Pro Pro Gly Gln Gly His Thr Thr Gly Ser Val Lys Pro Leu Xaa Arg
         35                  40                  45

Ser Asp Ala Met Glu Leu Asp Leu Ser Pro Pro His Leu Ser Ser Ser
     50                  55                  60

Pro Glu Asp Leu Cys Pro Ala Pro Gly Thr Pro Pro Gly Thr Pro Arg
 65                  70                  75                  80

Pro Pro Asp Thr Pro Leu Pro Glu Glu Val Lys Arg Ser Gln Pro Leu
                 85                  90                  95

Leu Ile Pro Thr Thr Gly Arg Lys Leu Arg Glu Glu Glu Arg Arg Ala
            100                 105                 110

Thr Ser Leu Pro Ser Ile Pro Asn Pro Phe Pro Glu Leu Cys Ser Pro
        115                 120                 125

Pro Ser Gln Ser Pro Ile Leu Gly Gly Pro Ser Ser Ala Arg Gly Leu
    130                 135                 140

Leu Pro Ala Asn Ala Ser Arg Pro His Val Val Lys Val Tyr Ser Glu
145                 150                 155                 160

Asp Gly Ala Cys Ser Leu Trp Arg Trp Gln Gln Val Pro Gln Xaa Ala
                165                 170                 175

Thr Cys Val Lys Cys Trp Cys Thr Ser Xaa Xaa Leu Ser Asp Glu Thr
            180                 185                 190
```

Trp Gly Phe Val Glu Cys His Pro Asn
195 200

<210> 778
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (81)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 778
Asn Gln Cys Ser Gly Glu Arg His Leu Arg Val Thr Gln Gly Leu Gly
1 5 10 15

Thr Gly Ala Phe Leu Gly Gly Leu Arg Pro Val Leu Gln Pro Arg Gln
20 25 30

Gly Gln Asp Phe Arg Lys Tyr Glu Glu Gly Phe Asp Pro Tyr Ser Met
35 40 45

Phe Thr Pro Glu Gln Ile Met Gly Lys Asp Val Arg Leu Leu Arg Ile
50 55 60

Lys Lys Glu Gly Ser Leu Asp Leu Ala Leu Glu Gly Gly Val Asp Ser
65 70 75 80

Xaa Ile Gly Lys Val Val Val Ser Ala Val Tyr Glu Arg Gly Ala Ala
85 90 95

Glu Arg His Gly Gly Ile Val Lys Gly Asp Glu Ile Met Ala Ile Asn
100 105 110

Gly Lys Ile Val Thr Asp Tyr Thr
115 120

<210> 779
<211> 111
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (88)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (91)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (94)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (98)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (101)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (103)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (106)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (107)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (108)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 779
His Gln Glu Glu Leu Arg Leu Leu Gly Arg Lys Ala Arg Arg Asn Thr
1   5   10   15

Arg Leu Arg Asp Glu Phe Ser Thr Glu Ala Ala Lys Leu Trp Thr Leu
            20   25   30

Ala Arg Pro Phe Cys Pro Pro Leu Leu Ala Thr Leu Leu Gln Met Gln
        35   40   45

Met Val Val Leu Pro Cys Leu Gly Phe Thr Leu Leu Leu Trp Ser Gln
50 55 60

Val Ser Gly Ala Gln Gly Gln Glu Phe His Phe Gly Pro Cys Gln Val
65 70 75 80

Lys Gly Val Val Pro Gln Lys Xaa Trp Glu Xaa Phe Trp Xaa Val Lys
85 90 95

Asp Xaa Met Gln Xaa Gln Xaa Asn Ile Xaa Xaa Xaa Arg Leu Leu
100 105 110

<210> 780
<211> 110
<212> PRT
<213> Homo sapiens

<400> 780
Ile Arg His Glu Phe Asn Thr Lys Cys Pro Ser Gly Ser Cys Val Met
1 5 10 15

Asn Gln Tyr Leu Ser Ser Lys Phe Pro Lys Asp Phe Ser Thr Ser Cys
20 25 30

Arg Ala His Phe Glu Arg Tyr Leu Leu Ser Gln Lys Pro Lys Cys Leu
35 40 45

Leu Gln Ala Pro Ile Pro Thr Asn Ile Met Thr Thr Pro Val Cys Gly
50 55 60

Asn His Leu Leu Glu Val Gly Glu Asp Cys Asp Cys Gly Ser Pro Lys
65 70 75 80

Glu Cys Thr Asn Leu Cys Cys Glu Ala Leu Thr Cys Lys Leu Lys Pro
85 90 95

Gly Thr Asp Cys Gly Gly Asp Ala Pro Asn His Thr Thr Glu
100 105 110

<210> 781
<211> 124
<212> PRT
<213> Homo sapiens

<400> 781
Gly Gln Pro Ala Arg Val Trp Ser Leu Asp Thr Met Gly Thr Arg Leu

1 5 10 15

Leu Pro Ala Leu Phe Leu Val Leu Leu Val Leu Gly Phe Ala Pro Arg
20 25 30

Ala Leu Leu Thr His Ser Pro Pro Ala Glu Val Gln Gly Thr Gln Gln
35 40 45

Pro Gln Gln Asp Glu Met Pro Ser Pro Thr Phe Leu Thr Gln Val Lys
50 55 60

Glu Ser Leu Ser Ser Tyr Trp Glu Ser Ala Lys Thr Ala Ala Gln Asn
65 70 75 80

Leu Tyr Glu Lys Thr Tyr Leu Pro Ala Val Asp Glu Lys Leu Arg Asp
85 90 95

Leu Tyr Ser Lys Ser Thr Ala Ala Met Ser Thr Tyr Thr Gly Ile Phe
100 105 110

Thr Asp Gln Val Leu Ser Val Leu Lys Gly Glu Glu
115 120

<210> 782
<211> 86
<212> PRT
<213> Homo sapiens

<400> 782
Asn Arg Asp Val Ser Arg Asp Pro Gln Phe Trp Arg Leu Arg Ser Leu
1 5 10 15

Lys Ser Arg His Gln Gln Ile Pro His Leu Val Lys Ala His Ser Leu
20 25 30

Leu His Arg Trp His Cys Leu Ala Val Phe Ser His Gly Arg Arg Gly
35 40 45

Lys Gln Ala Pro Leu Gly Leu Phe Tyr Lys Gly Thr Asn Ser Met Pro
50 55 60

Lys Gly Arg Ala Leu Met Thr Leu Ser Pro Thr Lys Arg Leu His Phe
65 70 75 80

Phe Ile Leu Leu Glu Gly
85

<210> 783
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (66)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (73)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (86)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (98)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 783

```
Gly Gln Ser Pro Asp Ala Gly Phe Leu Val Phe Pro Ala Gly Ile Lys
  1               5                  10                  15

Gln Lys Gly Leu Leu Leu Ser Ser Ser Leu Met His Ser Glu Ser Glu
             20                  25                  30

Leu Asp Ser Asp Asp Ala Ile Phe Thr Trp Pro Asp Arg Glu Lys Gly
         35                  40                  45

Lys Leu Leu Ala Trp Ser Glu Trp Leu Cys Thr Gln Arg Ala Asp Pro
     50                  55                  60

Ser Xaa Arg Pro Gly Ala Arg Gly Xaa Arg Ser Cys Ser His Leu Val
 65                  70                  75                  80

Cys Leu Leu Arg Ala Xaa Pro Gly Thr Ile Ala Arg Pro Val Leu Leu
                 85                  90                  95

Thr Xaa Arg Val Leu Arg
            100
```

<210> 784
<211> 44

<212> PRT
<213> Homo sapiens

<400> 784
Ile Tyr Ile Thr Gly Tyr Val Asn Ile Phe Lys Tyr Trp Gly Asn Cys
1 5 10 15

Phe Thr Val Leu Glu Pro Ser Lys Ile His Leu Cys Phe Val Phe Met
20 25 30

Phe Ile Cys Leu Leu Lys Ala Arg Val Glu Asp Lys
35 40

<210> 785
<211> 47
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (39)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 785
Ala Gly Ile Thr Pro Leu His Ser Ser Leu Gly Asp Lys Ser Glu Ser
1 5 10 15

Val Ser His Gln Lys Lys Lys Glu Lys Glu Arg Cys Leu Thr Lys Val
20 25 30

Thr Ile Ser His Lys Phe Xaa Thr Thr Tyr Pro Ser Ser Phe Lys
35 40 45

<210> 786
<211> 301
<212> PRT
<213> Homo sapiens

<400> 786
Leu Arg Val Phe Leu Cys Val Phe Phe Tyr Phe Ala Trp Leu Phe Glu
1 5 10 15

His Tyr Trp Thr Leu Val Leu Glu Gly Lys Thr Phe Gln Leu Tyr Ser
20 25 30

His Asn Leu Ile Ala Leu Phe Glu His Ala Lys Lys Pro Gly Leu Ala
35 40 45

```
Ala His Ile Gln Thr His Arg Phe Pro Asp Arg Ile Leu Pro Arg Lys
     50                  55                  60

Phe Ala Leu Thr Thr Lys Ile Pro Asp Thr Lys Gly Cys His Lys Cys
 65                  70                  75                  80

Cys Ile Val Arg Asn Pro Tyr Thr Gly His Lys Tyr Leu Cys Gly Ala
                 85                  90                  95

Leu Gln Ser Gly Ile Val Leu Leu Gln Trp Tyr Glu Pro Met Gln Lys
            100                 105                 110

Phe Met Leu Ile Lys His Phe Asp Phe Pro Leu Pro Ser Pro Leu Asn
        115                 120                 125

Val Phe Glu Met Leu Val Ile Pro Glu Gln Glu Tyr Pro Met Val Cys
    130                 135                 140

Val Ala Ile Ser Lys Gly Thr Glu Ser Asn Gln Val Val Gln Phe Glu
145                 150                 155                 160

Thr Ile Asn Leu Asn Ser Ala Ser Ser Trp Phe Thr Glu Ile Gly Ala
                165                 170                 175

Gly Ser Gln Gln Leu Asp Ser Ile His Val Thr Gln Leu Glu Arg Asp
            180                 185                 190

Thr Val Leu Val Cys Leu Asp Lys Phe Val Lys Ile Val Asn Leu Gln
        195                 200                 205

Gly Lys Leu Lys Ser Ser Lys Lys Leu Ala Ser Glu Leu Ser Phe Asp
    210                 215                 220

Phe Arg Ile Glu Ser Val Val Cys Leu Gln Asp Ser Val Leu Ala Phe
225                 230                 235                 240

Trp Lys His Gly Met Gln Gly Lys Ser Phe Lys Ser Asp Glu Val Thr
                245                 250                 255

Gln Glu Ile Ser Asp Glu Thr Arg Val Phe Arg Leu Leu Gly Ser Asp
            260                 265                 270

Arg Val Val Val Leu Glu Ser Arg Pro Thr Glu Asn Pro Thr Ala His
        275                 280                 285

Ser Asn Leu Tyr Ile Leu Ala Gly His Glu Asn Ser Tyr
    290                 295                 300
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<210> 787
<211> 141
<212> PRT
<213> Homo sapiens

<400> 787
Asn Lys Phe Gln Gly Phe Ser Leu Pro Leu Val Arg Lys Phe Ala His
1 5 10 15

Ser Ile Leu Gln Cys Leu Asp Ala Leu His Lys Asn Arg Ile Ile His
20 25 30

Cys Asp Leu Lys Pro Glu Asn Ile Leu Leu Lys Gln Gln Gly Arg Ser
35 40 45

Gly Ile Lys Val Ile Asp Phe Gly Ser Ser Cys Tyr Glu His Gln Arg
50 55 60

Val Tyr Thr Tyr Ile Gln Ser Arg Phe Tyr Arg Ala Pro Glu Val Ile
65 70 75 80

Leu Gly Ala Arg Tyr Gly Met Pro Ile Asp Met Trp Ser Leu Gly Cys
85 90 95

Ile Leu Ala Glu Leu Leu Thr Gly Tyr Pro Leu Leu Pro Gly Glu Asp
100 105 110

Glu Gly Asp Gln Leu Ala Cys Met Ile Glu Leu Leu Gly Met Pro His
115 120 125

Arg Asn Cys Trp Met His Pro Asn Glu Pro Lys Ile Leu
130 135 140

<210> 788
<211> 75
<212> PRT
<213> Homo sapiens

<400> 788
Glu Lys Arg Ser Ser Ser Phe Glu Ala Arg Gly Leu Ile Trp Arg Ser
1 5 10 15

Lys Thr Leu His Val His Phe Gln Thr Trp Ser Gly Thr Tyr Ile Val
20 25 30

Asn Tyr Asn Gln Ser Trp Glu Leu His Lys Asp Asn Glu Ala Gln Leu
35 40 45

Lys Pro Ser Phe Ser Leu Pro Tyr Leu Tyr Pro Ser Leu Arg Thr Ala

50 55 60

Val Gln Glu Asn Gln Ala Val Cys Gly Leu Leu
65 70 75

<210> 789
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (53)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 789
Met Gly Trp Ala Lys His Cys Cys Arg Phe Ile Leu Leu Pro Thr Gln
1 5 10 15

Leu Leu His Asn Lys Ala Leu Leu Ser Leu Lys Lys Lys Lys Lys Lys
20 25 30

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
35 40 45

Lys Lys Lys Asn Xaa Gly Gly Gly Pro Pro Pro
50 55

<210> 790
<211> 111
<212> PRT
<213> Homo sapiens

<400> 790
Asp Glu Lys Gly Thr Val Pro Gln Arg Tyr Thr Phe Gly Thr Ser Ile
1 5 10 15

Met Lys Ala Ser Leu Ala Trp Gln Val Glu Tyr Arg Gln Phe Trp Ile
20 25 30

Phe Asn Ala Trp His Gly Ala Gly Val Lys Tyr Leu Ala Arg Ala Cys
35 40 45

Leu Pro Tyr Asn Gly Arg Glu Pro Gly Leu Trp Met Ile Arg Tyr Gln
50 55 60

Thr Leu Leu Leu Leu Ser Val Phe Phe Cys Gly Lys Gly Arg Arg Ile

65 70 75 80

Glu Trp Arg Gly Ile Ser Gly Ser Leu Gly Glu Val Gln Asn Lys Glu
85 90 95

Thr Val Lys Ser Ser Thr Ser Lys Leu Gly Leu His Gln Asp Ser
100 105 110

<210> 791
<211> 245
<212> PRT
<213> Homo sapiens

<400> 791
Glu Tyr Leu Thr Ser Ser Gly Gly Arg Arg Met Glu Tyr Ile Leu Thr
1 5 10 15

Asp Ile Arg Lys Gly His Met Cys Asn Ala Lys Leu Leu Arg Asn Met
20 25 30

Pro Glu Phe Ser Gly Val Leu His Gln Cys His Ile Leu Ala Ser Glu
35 40 45

Met Val His Phe Ile His Gln Met Gln Tyr Tyr Ile Thr Phe Glu Val
50 55 60

Leu Glu Cys Ser Trp Asp Glu Leu Trp Asn Lys Val Gln Gln Ala Gln
65 70 75 80

Asp Leu Asp His Ile Ile Ala Ala His Glu Val Phe Leu Asp Thr Ile
85 90 95

Ile Ser Arg Cys Leu Leu Asp Ser Asp Ser Arg Ala Leu Leu Asn Gln
100 105 110

Leu Arg Ala Val Phe Asp Gln Ile Ile Glu Leu Gln Asn Ala Gln Asp
115 120 125

Ala Ile Tyr Arg Ala Ala Leu Glu Glu Leu Gln Arg Arg Leu Gln Phe
130 135 140

Glu Glu Lys Lys Lys Gln Arg Glu Ile Glu Gly Gln Trp Gly Val Thr
145 150 155 160

Ala Ala Glu Glu Glu Glu Glu Asn Lys Arg Ile Gly Glu Phe Lys Glu
165 170 175

Ser Ile Pro Lys Met Cys Ser Gln Leu Arg Ile Leu Thr His Phe Tyr
180 185 190

Gln Gly Ile Val Gln Gln Phe Leu Val Leu Leu Thr Thr Ser Ser Asp
195 200 205

Glu Ser Leu Arg Phe Leu Ser Phe Arg Leu Asp Phe Asn Glu His Tyr
210 215 220

Lys Ala Arg Glu Pro Arg Leu Arg Cys Val Ser Gly Tyr Gln Gly Ala
225 230 235 240

Ala His Ser His Thr
245

<210> 792
<211> 108
<212> PRT
<213> Homo sapiens

<400> 792
Phe Trp Ala Tyr Thr Lys Lys Ser Arg Tyr Gly Lys Ile Tyr Cys Gln
1 5 10 15

Gly Ile Leu Glu Phe Pro Thr Arg Val Gly Glu Arg Cys Pro Asn Ser
20 25 30

Leu Arg Met Val Phe Met Met Val Pro Tyr Leu Ser Pro Gly Leu Phe
35 40 45

Ser Tyr Ser Val Pro Gln Lys Cys Cys Arg Gly Gln Asp Ser Thr Phe
50 55 60

Thr Ala Cys Ser Ile Tyr Glu Ile Phe Gln Met Leu Leu Val Val Asp
65 70 75 80

Ile Pro Asn Ser Trp Tyr Leu Ala Thr Arg Asp His Asp Gly Met Ser
85 90 95

Gly Trp Leu Phe Tyr Leu Pro Phe Pro Gln Asn Ser
100 105

<210> 793
<211> 128
<212> PRT
<213> Homo sapiens

<400> 793
Glu Ala Ala Asn Met Ile Leu Val Asp Asp Asp Phe Ser Ala Ile Met

1 5 10 15

Asn Ala Val Glu Glu Gly Lys Gly Ile Phe Tyr Asn Ile Lys Asn Phe
20 25 30

Val Arg Phe Gln Leu Ser Thr Ser Ile Ser Ala Leu Ser Leu Ile Thr
35 40 45

Leu Ser Thr Val Phe Asn Leu Pro Ser Pro Leu Asn Ala Met Gln Ile
50 55 60

Leu Trp Ile Asn Ile Ile Met Asp Gly Pro Pro Gly Arg Gly Glu Ala
65 70 75 80

Gly Arg Leu Gly Ala Leu Cys Leu Phe Thr Tyr Leu Arg Gly Phe Leu
85 90 95

Gln Gly Leu Leu Ala Val Pro Lys Ala Ile Gly Met Asn Lys Tyr Ser
100 105 110

His Phe Pro Ser Gly Val Pro Arg Lys Leu Lys Cys Val Ala Leu Glu
115 120 125

<210> 794
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 794
Ser Ser Val Pro Gly Gly Tyr Pro Gly Thr Glu His Ser His Arg Cys
1 5 10 15

Arg Arg Phe Tyr Gln Leu Ala Leu Gly Trp Thr Thr Leu Ala Lys Thr
20 25 30

Ser Trp Leu Glu Asp Xaa Ser Pro Asp Leu Val Pro Arg Gly Ser Gln
35 40 45

Leu Ala Gly Gly Val Ile Leu Gly Val Ala Leu Trp Leu Arg His Asp
50 55 60

Pro Gln Thr Thr Asn Leu Leu Tyr Leu Glu Leu Gly Asp Lys Pro Ala
65 70 75 80

Pro Asn Thr Phe Tyr Val Gly Ile Tyr Ile Leu Ile Ala Val Gly Ala
85 90 95

Val Met Met Phe Val Gly Phe Leu Gly Cys Tyr Gly Ala Ile Gln Glu
100 105 110

Ser Gln Cys Leu Leu Gly Thr Phe Phe Thr Cys Leu Val Ile Leu Phe
115 120 125

Ala Cys Glu Val Ala Ala Gly Ile Trp Gly Phe Val Asn Lys Asp Gln
130 135 140

Ile Ala Lys Asp Val Lys Gln Phe Tyr Asp Gln Ala Leu Gln Gln Ala
145 150 155 160

Val Val Asp Asp Asp Ala Asn Asn Ala Lys Ala Val Val Lys Thr Phe
165 170 175

His Glu Thr Leu Asp Cys Cys Gly Ser Ser Thr Leu Thr Ala Leu Thr
180 185 190

Thr Ser Val Leu Lys Asn Asn Leu Cys Pro Ser Gly Ser Asn Ile Ile
195 200 205

Ser Asn Leu Phe Lys Glu Asp Cys His Gln Lys Ile Asp Asp Leu Phe
210 215 220

Ser Gly Lys Leu Tyr Leu Ile Gly Ile Ala Ala Ile Val Val Ala Val
225 230 235 240

Ile Met Ile Phe Glu Met Ile Leu Ser Met Val Leu Cys Cys Gly Ile
245 250 255

Arg Asn Ser Ser Val Tyr
260

<210> 795
<211> 45
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (44)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (45)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 795
Ser Gln Leu Leu Gly Arg Leu Arg Gln Glu Asn Gly Val Asn Pro Gly
1 5 10 15

Gly Gly Ala Cys Ser Glu Pro Arg Ser Cys His Cys Thr Pro Ala Trp
20 25 30

Ala Thr Glu Arg Asp Phe Arg Leu Lys Lys Lys Xaa Xaa
35 40 45

<210> 796
<211> 178
<212> PRT
<213> Homo sapiens

<400> 796
Phe Arg Ala Leu His Arg Gly Ala Ala Leu Asp Leu Ser Pro Leu His
1 5 10 15

Arg Ser Pro His Pro Ser Arg Gln Ala Ile Phe Cys Trp Met Ser Phe
20 25 30

Ser Ala Tyr Gln Thr Ala Phe Ile Cys Leu Gly Leu Leu Val Gln Gln
35 40 45

Ile Ile Phe Phe Leu Gly Thr Thr Ala Leu Ala Phe Leu Val Leu Met
50 55 60

Pro Val Leu His Gly Arg Asn Leu Leu Leu Phe Arg Ser Leu Glu Ser
65 70 75 80

Ser Trp Pro Phe Trp Leu Thr Leu Ala Leu Ala Val Ile Leu Gln Asn
85 90 95

Met Ala Ala His Trp Val Phe Leu Glu Thr His Asp Gly His Pro Gln
100 105 110

Leu Thr Asn Arg Arg Val Leu Tyr Ala Ala Thr Phe Leu Leu Phe Pro
115 120 125

Leu Asn Val Leu Val Gly Ala Met Val Ala Thr Trp Arg Val Leu Leu
130 135 140

Ser Ala Leu Tyr Asn Ala Ile His Leu Gly Gln Met Asp Leu Ser Leu

145 150 155 160

Leu Pro Pro Arg Ala Ala Leu Ser Thr Pro Ala Thr Thr Arg Thr Glu
165 170 175

Thr Ser

<210> 797
<211> 219
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (66)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 797
Ala Gly Leu Cys Ser Ala Asp Trp Arg Pro Pro Gly Thr Glu Val Thr
1 5 10 15

Ser Gln Gly Pro Arg Gln Pro Ser Ser Ser Gly Ala Lys Arg Arg Arg
20 25 30

Leu Arg Ala Ala Leu Gly Pro Gln Pro Thr Arg Ser Ala Leu Arg Phe
35 40 45

Pro Ser Ala Ser Pro Gly Ser Leu Lys Ala Lys Gln Ser Met Ala Gly
50 55 60

Ile Xaa Gly Arg Glu Ser Asn Ala Pro Ser Val Pro Thr Val Ser Leu
65 70 75 80

Leu Pro Gly Ala Pro Gly Gly Asn Ala Ser Ser Arg Thr Glu Ala Gln
85 90 95

Val Pro Asn Gly Gln Gly Ser Pro Gly Gly Cys Val Cys Ser Ser Gln
100 105 110

Ala Ser Pro Ala Pro Arg Ala Ala Ala Pro Pro Arg Ala Ala Arg Gly
115 120 125

Pro Thr Pro Arg Thr Glu Glu Ala Ala Trp Ala Ala Met Ala Leu Thr
130 135 140

Phe Leu Leu Val Leu Leu Thr Leu Ala Thr Leu Cys Thr Arg Leu His
145 150 155 160

Arg Asn Phe Arg Arg Gly Glu Ser Ile Tyr Trp Gly Pro Thr Ala Asp
165 170 175

Ser Gln Asp Thr Val Ala Ala Val Leu Lys Arg Arg Leu Leu Gln Pro
180 185 190

Ser Arg Arg Val Lys Arg Ser Arg Arg Arg Pro Leu Leu Pro Pro Thr
195 200 205

Pro Asp Ser Gly Pro Glu Gly Glu Ser Ser Glu
210 215

<210> 798
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 798
Tyr Gln Leu Lys Pro Tyr Thr Xaa His Leu Ile Lys Asp Leu His Phe
1 5 10 15

Phe Leu Arg Val Leu Ile Gln Leu Tyr His Arg Ile Pro His Lys Leu
20 25 30

His Ile Ile Pro Leu Trp Asp Arg Asp Pro Ser Thr Ser Leu Leu Glu
35 40 45

Gln Gly His Ile Val His Tyr Leu Ser Gln Val Leu Ile Ser Ser Pro
50 55 60

Lys Asp Gln Thr Val Phe Gln His Leu Leu Leu Gln Gly Ser Val Leu
65 70 75 80

Ile Leu Ala Leu Trp Pro Cys His Met Gly Phe Lys Asp Leu Ser Arg
85 90 95

His Leu Gln Cys Leu Asp Arg Phe Gln Phe Thr Glu His Arg Cys His
100 105 110

Gln His Phe Lys Thr Ile Thr Met Gly Gln Gly Gly Ile Lys Met Asp
115 120 125

Ser Lys Asn Ile Phe Leu Asn Val Leu
130 135

<210> 799
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (49)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 799
Cys Phe Gly Ala Gly Gln Ser Val Ala Gly Arg Gly His Met Pro Lys
1 5 10 15

Ser His His Glu Leu Pro Gly Ala Ser Arg Gln Gly Pro Ser Ile Pro
20 25 30

His Gln Val Phe Gln His Asp Val Pro Asp Gly Arg Gln Leu Gly Leu
35 40 45

Xaa Ala Glu Ile Lys Ala Gly Lys Ser Leu Lys Pro Thr Pro Gln Ser
50 55 60

Lys Gly Leu Thr Thr Val Phe Ser Gly Ile Gly Gln Pro Ala Phe Gln
65 70 75 80

Val Gly Gly Pro Ser Arg Ser Leu Arg Pro Gly Phe Pro Gly Pro Arg
85 90 95

Pro Pro Gly Ala Gln Pro His Arg Phe Ser Leu Gln Pro Asp Ser Pro
100 105 110

Leu Pro Ser Val Ser Pro Ala
115

<210> 800
<211> 148
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (93)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 800

Gly Ser Thr His Ala Ser Gly Trp Ser Cys Val Tyr Lys Asn Asp Gln
1 5 10 15

Ala Ala Lys Asp Asn Pro Thr Lys Ser Leu Gln Glu Glu Glu Pro Cys
20 25 30

Pro Arg Phe Ala His Gln Leu Val Tyr Asp Glu Leu His Lys Val His
35 40 45

Tyr Leu Phe Gly Gly Asn Pro Gly Lys Ser Cys Ser Pro Lys Met Arg
50 55 60

Leu Asp Asp Phe Trp Ser Leu Lys Leu Cys Arg Pro Ser Lys Asp Tyr
65 70 75 80

Leu Leu Arg His Cys Lys Tyr Leu Ile Arg Lys His Xaa Phe Glu Glu
85 90 95

Lys Ala Gln Val Asp Pro Leu Ser Ala Leu Lys Tyr Leu Gln Asn Asp
100 105 110

Leu Tyr Ile Thr Val Asp His Ser Asp Pro Glu Glu Thr Lys Glu Phe
115 120 125

Gln Leu Leu Ala Ser Ala Leu Phe Lys Ser Gly Ser Arg Phe Tyr Ser
130 135 140

Ser Gly Leu Phe
145

<210> 801
<211> 214
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (214)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 801
Ser His Ile Gln Gly Glu Gly Ser Cys Thr Leu Phe Arg Lys Tyr Asp
1 5 10 15

His Met Arg Ala Ala Ile Leu Glu Lys Met Pro Leu Val Glu Arg Asp
20 25 30

Gly Pro Gln Ala Asp Glu Glu Ala Lys Glu Ser Lys Glu Ala Ala Gln
35 40 45

Leu Ser Glu Ala Ala Pro Val Pro Thr Glu Pro Gln Ala Ser Gln Leu
50 55 60

Leu Asp Leu Leu Asp Leu Leu Asp Gly Ala Ser Gly Asp Val Gln His
65 70 75 80

Pro Pro His Leu Asp Pro Ser Pro Gly Gly Ala Leu Val His Leu Leu
85 90 95

Asp Leu Pro Cys Val Pro Pro Pro Pro Ala Pro Ile Pro Asp Leu Lys
100 105 110

Val Phe Glu Arg Glu Gly Val Gln Leu Asn Leu Ser Phe Ile Arg Pro
115 120 125

Pro Glu Asn Pro Ala Leu Leu Leu Ile Thr Ile Thr Ala Thr Asn Phe
130 135 140

Ser Glu Gly Asp Val Thr His Phe Ile Cys Gln Ala Ala Val Pro Lys
145 150 155 160

Ser Leu Gln Leu Gln Leu Gln Ala Pro Ser Gly Asn Thr Val Pro Ala
165 170 175

Arg Gly Gly Leu Pro Ile Thr Gln Leu Phe Arg Ile Leu Asn Pro Asn
180 185 190

Lys Ala Pro Leu Arg Leu Lys Leu Arg Ser Leu Arg Pro Leu Ser Pro
195 200 205

Val Gly Ala Gly Asp Xaa
210

<210> 802
<211> 51
<212> PRT
<213> Homo sapiens

<400> 802
Lys Phe Ala Asn Leu Lys Arg Gly Val Ser Glu Asp His Tyr Leu Leu
1 5 10 15

Arg Thr Leu Lys Asn Lys Cys Leu Gln Leu Cys Met Gly Thr Ile Leu
20 25 30

Tyr Ser Leu His Phe Tyr Gly Pro Thr Ala Thr Ser Tyr Pro Cys Lys
35 40 45

Tyr Ile Asn
50

<210> 803
<211> 167
<212> PRT
<213> Homo sapiens

<400> 803
Ala Arg Leu Pro Gly Ser Gly Cys Cys Arg Pro Pro Val Ser Ala Arg
1 5 10 15

Val Ala Pro Gly His Gln Gly Ala Val Gly Gly Ser Gly Arg Arg Pro
20 25 30

Ala Arg Val Glu Val Val Asp Ala Ala Ala Arg Pro Ser Ser Arg Pro
35 40 45

Phe Ser Leu Pro Ala Ala Ile Met Leu Ala Leu Ile Ser Arg Leu Leu
50 55 60

Asp Trp Phe Arg Ser Leu Phe Trp Lys Glu Glu Met Glu Leu Thr Leu
65 70 75 80

Val Gly Leu Gln Tyr Ser Gly Lys Thr Thr Phe Val Asn Val Ile Ala
85 90 95

Ser Gly Gln Phe Ser Glu Asp Met Ile Pro Thr Val Gly Phe Asn Met
100 105 110

Arg Lys Val Thr Lys Gly Asn Val Thr Ile Lys Ile Trp Asp Ile Gly
115 120 125

Gly Gln Pro Arg Phe Arg Ser Met Trp Glu Arg Tyr Cys Arg Gly Val
130 135 140

Asn Ala Ile Val Tyr Met Ile Asp Ala Ala Asp Arg Glu Lys Ile Glu
145 150 155 160

Ala Ser Arg Asn Glu Leu Thr
165

<210> 804
<211> 361
<212> PRT
<213> Homo sapiens

<400> 804

Ala Arg Ser Arg Asp Gly Ala Pro Glu Arg Arg Glu Pro Gly Leu Gly
1   5   10   15

Val Leu Leu Arg Glu Glu Glu Trp Ser Arg Gly Asp Ala Ala Ala Ala
            20   25   30

Leu Thr Met Ser Phe Leu Gly Gly Phe Phe Gly Pro Ile Cys Glu Ile
        35   40   45

Asp Ile Val Leu Asn Asp Gly Glu Thr Arg Lys Met Ala Glu Met Lys
    50   55   60

Thr Glu Asp Gly Lys Val Glu Lys His Tyr Leu Phe Tyr Asp Gly Glu
65   70   75   80

Ser Val Ser Gly Lys Val Asn Leu Ala Phe Lys Gln Pro Gly Lys Arg
                85   90   95

Leu Glu His Gln Gly Ile Arg Ile Glu Phe Val Gly Gln Ile Glu Leu
            100   105   110

Phe Asn Asp Lys Ser Asn Thr His Glu Phe Val Asn Leu Val Lys Glu
        115   120   125

Leu Ala Leu Pro Gly Glu Leu Thr Gln Ser Arg Ser Tyr Asp Phe Glu
    130   135   140

Phe Met Gln Val Glu Lys Pro Tyr Glu Ser Tyr Ile Gly Ala Asn Val
145   150   155   160

Arg Leu Arg Tyr Phe Leu Lys Val Thr Ile Val Arg Arg Leu Thr Asp
                165   170   175

Leu Val Lys Glu Tyr Asp Leu Ile Val His Gln Leu Ala Thr Tyr Pro
            180   185   190

Asp Val Asn Asn Ser Ile Lys Met Glu Val Gly Ile Glu Asp Cys Leu
        195   200   205

His Ile Glu Phe Glu Tyr Asn Lys Ser Lys Tyr His Leu Lys Asp Val
    210   215   220

Ile Val Gly Lys Ile Tyr Phe Leu Leu Val Arg Ile Lys Ile Gln His
225   230   235   240

Met Glu Leu Gln Leu Ile Lys Lys Glu Ile Thr Gly Ile Gly Pro Ser
                245   250   255

Thr Thr Thr Glu Thr Glu Thr Ile Ala Lys Tyr Glu Ile Met Asp Gly
            260   265   270

Ala Pro Val Lys Gly Glu Ser Ile Pro Ile Arg Leu Phe Leu Ala Gly
275 280 285

Tyr Asp Pro Thr Pro Thr Met Arg Asp Val Asn Lys Lys Phe Ser Val
290 295 300

Arg Tyr Phe Leu Asn Leu Val Leu Val Asp Glu Glu Asp Arg Ser Ser
305 310 315 320

Phe Lys Gln Gln Glu Ile Ile Leu Trp Arg Lys Ala Pro Glu Lys Leu
325 330 335

Arg Lys Gln Arg Thr Asn Phe His Gln Arg Phe Glu Ser Pro Glu Ser
340 345 350

Gln Ala Ser Ala Glu Gln Pro Glu Met
355 360

<210> 805
<211> 92
<212> PRT
<213> Homo sapiens

<400> 805
Ala Ala Pro Pro Ala Leu Arg Thr Trp Pro Arg Lys Ala Glu Trp Pro
1 5 10 15

Ala Gly Ala Pro Gln Gly Trp Arg Pro Arg Ser Leu Ser Val Thr His
20 25 30

Ser Thr Thr Arg Cys Pro Leu Val Gly Val Arg Ala Glu Gly Leu Arg
35 40 45

His Ala Thr Ala Pro Leu Glu Leu Gly Thr Thr Asp Trp Thr Gly Ser
50 55 60

Leu His Ala Gln Pro Pro Glu Thr Gly Thr Pro Ser Leu Lys Gly Pro
65 70 75 80

Arg Arg Gln Val Asp Lys Lys Val Glu Lys Gly Val
85 90

<210> 806
<211> 271
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 806
Xaa Gly Phe Pro Ala Pro Leu Pro Pro Thr Arg Met Met Glu Ser Lys
1 5 10 15

Met Ile Ala Ala Ile His Ser Ser Ser Ala Asp Ala Thr Ser Ser Ser
20 25 30

Asn Tyr His Ser Phe Val Thr Ala Ser Ser Thr Ser Val Asp Asp Ala
35 40 45

Leu Pro Leu Pro Leu Pro Val Pro Gln Pro Lys His Ala Ser Gln Lys
50 55 60

Thr Val Tyr Ser Ser Phe Ala Arg Pro Asp Val Thr Thr Glu Pro Phe
65 70 75 80

Gly Pro Asp Asn Cys Leu His Phe Asn Met Thr Pro Asn Cys Gln Tyr
85 90 95

Arg Pro Gln Ser Val Pro Pro His His Asn Lys Leu Glu Gln His Gln
100 105 110

Val Tyr Gly Ala Arg Ser Glu Pro Pro Ala Ser Met Gly Leu Arg Tyr
115 120 125

Asn Thr Tyr Val Ala Pro Gly Arg Asn Ala Ser Gly His His Ser Lys
130 135 140

Pro Cys Ser Arg Val Glu Tyr Val Ser Ser Leu Ser Ser Ser Val Arg
145 150 155 160

Asn Thr Cys Tyr Pro Glu Asp Ile Pro Pro Tyr Pro Thr Ile Arg Arg
165 170 175

Val Gln Ser Leu His Ala Pro Pro Ser Ser Met Ile Arg Ser Val Pro
180 185 190

Ile Ser Arg Thr Glu Val Pro Pro Asp Asp Glu Pro Ala Tyr Cys Pro
195 200 205

Arg Pro Leu Tyr Gln Tyr Lys Pro Tyr Gln Ser Ser Gln Ala Arg Ser
210 215 220

Asp Tyr His Val Thr Gln Leu Gln Pro Tyr Phe Glu Asn Gly Arg Val
225 230 235 240

His Tyr Arg Tyr Ser Pro Tyr Ser Ser Ser Ser Ser Ser Tyr Tyr Ser
245 250 255

Pro Asp Gly Ala Leu Cys Asp Val Asp Ala Tyr Gly Gln Ser Ser
260 265 270

<210> 807
<211> 56
<212> PRT
<213> Homo sapiens

<400> 807
Asn Asn Thr Phe His Asn Gln Asn Phe Asn Ser Lys Tyr Lys Ile Lys
1 5 10 15

Phe Ile Leu Asn Asn Glu Asn Val Phe Val Leu Asn Leu Val Thr Arg
20 25 30

Glu His Arg Asn Lys Ile His Glu Thr Lys Val Ala Arg Asn Val Arg
35 40 45

Thr Gly Gly Asn Val Tyr Ile Ile
50 55

<210> 808
<211> 182
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (106)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 808
Val Cys Ala Xaa His Gly His Gly Arg Glu Leu Phe Gln Tyr Met Leu
1 5 10 15

Gln Lys Glu Arg Val Glu Pro His Gln Leu Ala Ile Asp Arg Pro Ser
20 25 30

Gln Lys Leu Leu Lys Phe Leu Asn Lys His Tyr Asn Leu Glu Thr Thr
35 40 45

Val Pro Gln Val Asn Asn Phe Val Ile Phe Glu Gly Phe Phe Ala His
50 55 60

Gln His Pro Pro Ala Arg Lys Leu Pro Pro Lys Arg Ala Glu Gly Asp
65 70 75 80

Ile Lys Pro Tyr Ser Ser Ser Asp Arg Glu Phe Leu Lys Val Ala Val
85 90 95

Glu Pro Pro Trp Pro Leu Asn Arg Ala Xaa Arg Arg Ala Thr Pro Pro
100 105 110

Ala His Pro Pro Pro Arg Ser Ser Ser Leu Gly Asn Ser Pro Glu Arg
115 120 125

Gly Pro Leu Arg Pro Phe Val Pro Glu Gln Glu Leu Leu Arg Ser Leu
130 135 140

Arg Leu Cys Pro Pro His Pro Thr Ala Arg Leu Leu Leu Ala Ala Asp
145 150 155 160

Pro Gly Gly Ser Pro Ala Gln Arg Arg Arg Thr Ser Ser Leu Pro Arg
165 170 175

Ser Glu Glu Ser Arg Tyr
180

<210> 809
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (72)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 809
Pro Ala Gly Glu Ser Ser Pro Ala Pro Trp Leu Lys Gly Pro Gly Ala
1 5 10 15

His Leu Pro Glu Ala Arg Cys Gly Gly Gly Pro Arg Gly Arg Ser Gln
20 25 30

Ala Gln Ser Pro Gln Ser Ser Gly Pro Val Gly Gly Arg Gly Arg Ser
35 40 45

Gly Ser Lys Ala Arg Thr Pro Gln Leu Phe Arg Leu Gln Gln Gln Leu
50 55 60

Gln Arg Phe Gly His Gly Cys Xaa Val Pro Arg Cys Trp Leu Gln Ala
65 70 75 80

Ala Arg Glu His Pro Gly Gln Gly Gln Glu Ala Gln Ser Glu Glu Glu
85 90 95

Gly Glu Gly Gln Glu Gly Glu Gly Gln Glu Glu Gly Gly Ser Pro Leu
100 105 110

Lys Gly Leu Asp Lys Ala His
115

<210> 810
<211> 144
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (24)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 810
Asp Ala Gly Cys Gly Arg Pro Pro Glu Pro Ala Gly Gly Gly Gln Ala
1 5 10 15

Ala Ala Ala Thr Glu Gly Gly Xaa Leu Ser Leu Gly Leu Gly Cys Arg
20 25 30

Gln Leu Gly Leu Leu Pro Gly Pro Ala Tyr Thr Ala Pro Pro Val Gly
35 40 45

Val Thr Val Gly Tyr Ser Gln Ala Gly Phe Leu Pro Cys Arg Thr Leu
50 55 60

Ser Leu Pro Pro Ala Cys Ser Trp Arg Leu Leu Pro Arg Gly Arg Leu
65 70 75 80

Phe Cys Leu Leu Lys Trp Val Cys Cys Thr Leu Thr Gly Gln Gly Gln
85 90 95

Ser Leu Gly Ala Val Leu Trp Pro Arg Val Gly Thr Cys Leu Asp Gln
100 105 110

Asn Glu Arg Thr Gly Ser Gln Thr Arg Leu Gly Val Leu Ile Leu Gly

115 120 125

Trp Thr Arg Leu Trp Ile Gln Arg Arg Gly Leu Val Ser Asn Lys Ser
130 135 140

<210> 811
<211> 154
<212> PRT
<213> Homo sapiens

<400> 811
His Glu Asp Asn Glu His Lys Arg Ser Leu Thr Lys Thr Pro Ala Arg
1 5 10 15

Lys Ser Ala His Val Thr Val Ser Gly Gly Thr Gln Lys Gly Glu Ala
20 25 30

Val Leu Gly Thr His Lys Leu Lys Thr Ile Thr Gly Asn Ser Ala Ala
35 40 45

Val Ile Thr Pro Phe Lys Leu Thr Thr Glu Ala Thr Gln Thr Pro Val
50 55 60

Ser Asn Lys Lys Pro Val Phe Asp Leu Lys Ala Ser Leu Ser Arg Pro
65 70 75 80

Leu Asn Tyr Glu Pro His Lys Gly Lys Leu Lys Pro Trp Gly Gln Ser
85 90 95

Lys Glu Asn Asn Tyr Leu Asn Gln His Val Asn Arg Ile Asn Phe Tyr
100 105 110

Lys Lys Thr Tyr Lys Gln Pro His Leu Gln Thr Lys Glu Glu Gln Arg
115 120 125

Lys Lys Arg Glu Gln Glu Arg Lys Glu Lys Lys Ala Lys Val Leu Gly
130 135 140

Met Arg Arg Gly Leu Ile Leu Ala Glu Asp
145 150

<210> 812
<211> 86
<212> PRT

<213> Homo sapiens

<220>
<221> SITE
<222> (78)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 812
Asn Arg Ser Phe Phe Val Ser Pro Phe Lys Ser Thr Gly Phe Lys Arg
1 5 10 15

Gly Lys Cys Ile His Arg Pro Gln Cys Leu Ala Phe Ser Ser Ala Ser
20 25 30

Thr Trp Ser Thr Gly Leu Asp Ala Gln Thr Tyr Leu Gly Asn Tyr Phe
35 40 45

Gly Arg Cys Leu Ser Leu Tyr Arg Asn Cys Ser Trp Tyr Phe Ile Leu
50 55 60

Leu Tyr Ile Tyr Ser Thr Cys Pro Leu Val Phe Asn Tyr Xaa Gln Ser
65 70 75 80

Leu Phe Arg Ser Lys Asn
85

<210> 813
<211> 566
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (341)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 813
Arg Glu Leu Val Thr Asp Gly Gly Ala Ala Ser Pro Trp Arg Cys Asn
1 5 10 15

Trp Glu Gln Leu Leu Asn Pro Arg Pro Ser Glu Ala Asp Pro Glu Ala
20 25 30

Asp Pro Glu Glu Ala Thr Ala Ala Arg Val Ile Asp Arg Phe Asp Glu
35 40 45

Gly Glu Asp Gly Glu Gly Asp Phe Leu Val Val Gly Ser Ile Arg Lys
50 55 60

Leu Ala Ser Ala Ser Leu Leu Asp Thr Asp Lys Arg Tyr Cys Gly Lys
65 70 75 80

Thr Thr Ser Arg Lys Ala Trp Asn Glu Asp His Trp Glu Gln Thr Leu
85 90 95

Pro Gly Ser Ser Asp Glu Glu Ile Ser Asp Glu Glu Gly Ser Gly Asp
100 105 110

Glu Asp Ser Glu Gly Leu Gly Leu Glu Glu Tyr Asp Glu Asp Asp Leu
115 120 125

Gly Ala Ala Glu Glu Gln Glu Cys Gly Asp His Arg Glu Ser Lys Lys
130 135 140

Ser Arg Ser His Ser Ala Lys Thr Pro Gly Phe Ser Val Gln Ser Ile
145 150 155 160

Ser Asp Phe Glu Lys Phe Thr Lys Gly Met Asp Asp Leu Gly Ser Ser
165 170 175

Glu Glu Glu Glu Asp Glu Glu Ser Gly Met Glu Glu Gly Asp Asp Ala
180 185 190

Glu Asp Ser Gln Gly Glu Ser Glu Glu Asp Arg Ala Gly Asp Arg Asn
195 200 205

Ser Glu Asp Asp Gly Val Val Met Thr Phe Ser Ser Val Lys Val Ser
210 215 220

Glu Glu Val Glu Lys Gly Arg Ala Val Lys Asn Gln Ile Ala Leu Trp
225 230 235 240

Asp Gln Leu Leu Glu Gly Arg Ile Lys Leu Gln Lys Ala Leu Leu Thr
245 250 255

Thr Asn Gln Leu Pro Gln Pro Asp Val Phe Pro Leu Phe Lys Asp Lys
260 265 270

Gly Gly Pro Glu Phe Ser Ser Ala Leu Lys Asn Ser His Lys Ala Leu
275 280 285

Lys Ala Leu Leu Arg Ser Leu Val Gly Leu Gln Glu Glu Leu Leu Phe
290 295 300

Gln Tyr Pro Asp Thr Arg Tyr Leu Val Asp Gly Thr Lys Pro Asn Ala
305 310 315 320

Gly Ser Glu Glu Ile Ser Ser Glu Asp Asp Glu Leu Val Glu Glu Lys
325 330 335

Lys Gln Gln Arg Xaa Arg Val Pro Ala Lys Arg Lys Leu Glu Met Glu
340 345 350

Asp Tyr Pro Ser Phe Met Ala Lys Arg Phe Ala Asp Phe Thr Val Tyr
355 360 365

Arg Asn Arg Thr Leu Gln Lys Trp His Asp Lys Thr Lys Leu Ala Ser
370 375 380

Gly Lys Leu Gly Lys Gly Phe Gly Ala Phe Glu Arg Ser Ile Leu Thr
385 390 395 400

Gln Ile Asp His Ile Leu Met Asp Lys Glu Arg Leu Leu Arg Arg Thr
405 410 415

Gln Thr Lys Arg Ser Val Tyr Arg Val Leu Gly Lys Pro Glu Pro Ala
420 425 430

Ala Gln Pro Val Pro Glu Ser Leu Pro Gly Glu Pro Glu Ile Leu Pro
435 440 445

Gln Ala Pro Ala Asn Ala His Leu Lys Asp Leu Asp Glu Glu Ile Phe
450 455 460

Asp Asp Asp Asp Phe Tyr His Gln Leu Leu Arg Glu Leu Ile Glu Arg
465 470 475 480

Lys Thr Ser Ser Leu Asp Pro Asn Asp Gln Val Ala Met Gly Arg Gln
485 490 495

Trp Leu Ala Ile Gln Lys Leu Arg Ser Lys Ile His Lys Lys Val Asp
500 505 510

Arg Lys Ala Ser Lys Gly Arg Lys Leu Arg Phe His Val Leu Ser Lys
515 520 525

Leu Leu Ser Phe Met Ala Pro Ile Asp His Thr Thr Met Asn Asp Asp
530 535 540

Ala Arg Thr Glu Leu Tyr Arg Ser Leu Phe Gly Gln Leu His Pro Pro
545 550 555 560

Asp Glu Gly His Gly Asp
565

<210> 814
<211> 66
<212> PRT
<213> Homo sapiens

<400> 814
Ala Tyr Thr Thr Met Thr Glu Asn Lys Arg Leu Phe Phe Glu Thr Pro
1   5   10   15

Ser Gln Lys Gln Asn Lys Thr Lys Lys Leu Asp Lys Cys Tyr Ile Asn
            20   25   30

Val Trp Val Val Arg Phe Tyr Phe Glu Ser Glu Val Cys Arg Tyr Ala
        35   40   45

Tyr Arg Phe Leu Glu Phe Thr Thr Phe Leu Phe Cys Ile Ile Asn Val
    50   55   60

Ile Phe
65

<210> 815
<211> 79
<212> PRT
<213> Homo sapiens

<400> 815
Glu Lys Glu Val Trp Arg Arg Lys Pro Arg Leu Glu Asn Ile Met Phe
1   5   10   15

Trp Leu Glu Ile Arg Thr Arg Asp Gly Lys Tyr Gln Cys Val Gln Met
            20   25   30

Tyr Phe Thr Glu Phe Glu Gly Thr His Asn Gln Glu Gly Lys Gln Phe
        35   40   45

Val Leu His Trp Thr Tyr Tyr Leu Asp Leu Gly Glu Gln Gln Asn Gly
    50   55   60

Met Trp Ser Val Arg Ser Ile Leu Phe Val Leu Leu Ser Leu Met
65   70   75

<210> 816
<211> 227
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (29)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (99)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 816
Ala Cys His Glu Lys Val Val Asn Ile Gln Lys Asp Pro Gly Glu Ser
1 5 10 15

Leu Gly Met Thr Val Ala Gly Gly Ala Ser His Arg Xaa Trp Asp Leu
20 25 30

Pro Ile Tyr Val Ile Ser Val Glu Pro Gly Gly Val Ile Ser Arg Asp
35 40 45

Gly Arg Ile Lys Thr Gly Asp Ile Leu Leu Asn Val Asp Gly Val Glu
50 55 60

Leu Thr Glu Val Ser Arg Ser Glu Ala Val Ala Leu Leu Lys Arg Thr
65 70 75 80

Ser Ser Ser Ile Val Leu Lys Ala Leu Glu Val Lys Glu Tyr Glu Pro
85 90 95

Gln Glu Xaa Cys Ser Ser Pro Ala Ala Leu Asp Ser Asn His Asn Met
100 105 110

Ala Pro Pro Ser Asp Trp Ser Pro Ser Trp Val Met Trp Leu Glu Leu
115 120 125

Pro Arg Cys Leu Tyr Asn Cys Lys Asp Ile Val Leu Arg Arg Asn Thr
130 135 140

Ala Gly Ser Leu Gly Phe Cys Ile Val Gly Gly Tyr Glu Glu Tyr Asn
145 150 155 160

Gly Asn Lys Pro Phe Phe Ile Lys Ser Ile Val Glu Gly Thr Pro Ala
165 170 175

Tyr Asn Asp Gly Arg Ile Arg Cys Gly Asp Ile Leu Leu Ala Val Asn
180 185 190

Gly Arg Ser Thr Ser Gly Met Ile His Ala Cys Leu Ala Arg Leu Leu
195 200 205

Lys Glu Leu Lys Gly Arg Ile Thr Leu Thr Ile Val Ser Trp Pro Gly
210 215 220

Thr Phe Leu
225

<210> 817
<211> 200
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (48)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (55)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (150)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 817
Pro Arg Val Arg Gly His Gln Gly Leu Leu Ala Pro Leu Gly Pro Gln
1 5 10 15

Pro Leu Leu Gly His Pro Met Pro Gly Ser Pro Ser Met Glu Thr His
20 25 30

Cys Cys Pro Thr Pro Ser Leu Arg Pro Thr Thr Thr Gly Pro Arg Xaa
35 40 45

Pro Thr Gly Pro Pro Gly Xaa Pro Gly Pro Met Gly Pro Pro Gly Pro
50 55 60

Pro Gly Pro Thr Gly Val Pro Gly Ser Pro Gly His Ile Gly Pro Pro
65 70 75 80

Gly Pro Thr Gly Pro Lys Gly Ile Ser Gly His Pro Gly Glu Lys Gly
85 90 95

Glu Arg Gly Leu Arg Gly Glu Pro Gly Pro Gln Gly Ser Ala Gly Ala
100 105 110

Ala Gly Gly Thr Gly Pro Lys Gly Asp Pro Gly Glu Lys Ser His Trp
115 120 125

Ala Pro Ser Leu Gln Ser Phe Leu Gln Gln Gln Ala Gln Leu Glu Leu
130 135 140

Leu Ala Arg Arg Val Xaa Leu Leu Glu Ala Ile Ile Trp Pro Glu Pro
145 150 155 160

Glu Leu Gly Ser Gly Ala Gly Pro Ala Gly Thr Gly Thr Pro Ser Leu
165 170 175

Leu Arg Gly Lys Arg Gly Gly His Ala Thr Asn Tyr Arg Ile Val Ala
180 185 190

Pro Arg Ser Arg Asp Glu Arg Gly
195 200

<210> 818
<211> 85
<212> PRT
<213> Homo sapiens

<400> 818
Glu Lys Leu Asp Glu Tyr Ile Tyr Arg His Phe Phe Gly His Thr Phe
1 5 10 15

Ser Pro Pro Tyr Gly Pro Ser Arg Pro Asp Lys Lys Gln Arg Met Val
20 25 30

Asn Ile Glu Asn Ser Arg His Arg Lys Gln Glu Gln Lys His Leu Gln
35 40 45

Pro Gln Pro Tyr Lys Arg Glu Gly Lys Trp His Lys Tyr Gly Arg Thr
50 55 60

Asn Gly Arg Gln Met Ala Asn Leu Glu Ile Glu Leu Gly Gln Leu Pro
65 70 75 80

Phe Asp Pro Gln Tyr
85

<210> 819
<211> 67
<212> PRT
<213> Homo sapiens

<400> 819
Leu Gln Ser Gly Phe Ile Arg Tyr Cys Pro Ala Arg Lys Phe Pro Phe
1 5 10 15

Cys Val Trp Leu Glu Gln Pro Ala Gly Thr Glu Trp Ile Leu Glu Glu
20 25 30

Gly Val Thr Thr Gly Pro Pro Arg Lys Pro Arg Ala Asp Ile Tyr Asn
35 40 45

Leu Arg Ser Pro Asp Glu Phe Ile Val Gly Gln Asn Gln Ala Leu Ile
50 55 60

Glu Pro Gly
65

<210> 820
<211> 60
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (57)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 820
Leu Thr Gly Ser Glu Leu Met Cys Arg Val Pro Ser Pro Lys Val Asn
1 5 10 15

Leu Glu Pro Leu Asp Asn Thr Asn Lys Asn Ile Tyr Phe Thr Ser Val
20 25 30

Ile Tyr Leu Glu Asn Xaa Leu Ser Ile Leu His Ile Phe Leu Ile Lys
35 40 45

Ser Thr Gly Asp His Cys Glu Val Xaa Ile Leu Xaa
50 55 60

<210> 821
<211> 259
<212> PRT
<213> Homo sapiens

<400> 821

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Leu Ser Leu Ser Leu Leu Ser Pro Gln Leu Asp Tyr His Arg Gly Leu
1               5                   10                  15

Leu Val Asp Arg Pro Ser Glu Thr Lys Thr Glu Glu Gln Gly Ile Pro
            20                  25                  30

Arg Pro Leu His Pro Pro Pro Pro Pro Pro Val Gln Pro Pro Gln His
        35                  40                  45

Pro Arg Ala Glu Gln Arg Glu Gln Glu Arg Ala Val Arg Glu Gln Trp
    50                  55                  60

Ala Glu Arg Glu Arg Glu Met Glu Arg Arg Glu Arg Thr Arg Ser Glu
65                  70                  75                  80

Arg Glu Trp Asp Arg Asp Lys Val Arg Glu Gly Pro Arg Ser Arg Ser
                85                  90                  95

Arg Ser Arg Asp Arg Arg Arg Lys Glu Arg Ala Lys Ser Lys Glu Lys
            100                 105                 110

Lys Ser Glu Lys Lys Glu Lys Ala Gln Glu Glu Pro Pro Ala Lys Leu
        115                 120                 125

Leu Asp Asp Leu Phe Arg Lys Thr Lys Ala Ala Pro Cys Ile Tyr Trp
    130                 135                 140

Leu Pro Leu Thr Asp Ser Gln Ile Val Gln Lys Glu Ala Glu Arg Ala
145                 150                 155                 160

Glu Arg Ala Lys Glu Arg Glu Lys Arg Arg Lys Glu Gln Glu Glu Glu
                165                 170                 175

Glu Gln Lys Glu Arg Glu Lys Glu Ala Glu Arg Glu Arg Asn Arg Gln
            180                 185                 190

Leu Glu Arg Glu Lys Arg Arg Glu His Ser Arg Glu Arg Asp Arg Glu
        195                 200                 205

Arg Glu Arg Glu Arg Glu Arg Asp Arg Gly Asp Arg Asp Arg Asp Arg
    210                 215                 220

Glu Arg Asp Arg Glu Arg Gly Arg Glu Arg Asp Arg Arg Asp Thr Lys
225                 230                 235                 240

Arg His Ser Arg Ser Arg Ser Arg Ser Thr Pro Val Arg Asp Arg Gly
                245                 250                 255

Gly Arg Arg
```

<210> 822
<211> 59
<212> PRT
<213> Homo sapiens

<400> 822
Ile Asn Pro Ala Leu Leu Arg Lys Gly Asn Leu Phe Arg Gln Ser Gly
1 5 10 15

Lys Gly Val Leu Arg Lys Leu Ser Phe Phe Ile Pro Ser Phe Leu Pro
20 25 30

Thr Thr Val Thr Gly Tyr Arg Gly Leu Trp Thr Leu Lys Thr Asn Val
35 40 45

Trp Pro Leu Thr Gly Leu Ile Cys Ile Phe Leu
50 55

<210> 823
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (128)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (133)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 823
Ser Trp Lys Thr Gly Glu Asp Lys Ser Met Ser Ser Leu Pro Gly Cys
1 5 10 15

Ile Gly Leu Asp Ala Ala Thr Ala Thr Val Glu Ser Glu Glu Ile Ala
20 25 30

Glu Leu Gln Gln Ala Val Val Glu Glu Leu Gly Ile Ser Met Glu Glu
35 40 45

Leu Arg His Phe Ile Asp Glu Glu Leu Glu Lys Met Asp Cys Val Gln
50 55 60

Gln Arg Lys Lys Gln Leu Ala Glu Leu Glu Thr Trp Val Ile Gln Lys
65 70 75 80

Glu Ser Glu Val Ala His Val Asp Gln Leu Phe Asp Asp Ala Ser Arg
85 90 95

Ala Val Thr Asn Cys Glu Ser Leu Val Lys Asp Phe Tyr Ser Lys Leu
100 105 110

Gly Leu Gln Tyr Arg Asp Ser Ser Ser Glu Asp Glu Ser Ser Arg Xaa
115 120 125

Thr Glu Ile Ile Xaa Ile Pro Asp Glu Asp Asp Asp Val Leu Ser Ile
130 135 140

Asp Ser Gly Asp Ala Gly Ser Arg Thr Pro Lys Asp Gln Lys Leu Arg
145 150 155 160

Glu Ala Met Ala Ala Leu Arg Lys Ser Ala Gln Asp Val Gln Lys
165 170 175

<210> 824
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (36)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 824
His Lys Leu Asn Pro Met Tyr Leu Lys Leu Leu Gln Ser Phe Pro Leu
1 5 10 15

Tyr Phe Lys Gln Gln Lys Ser Gly Gly His Ile Val Val Leu Ser Phe
20 25 30

Lys Leu Cys Xaa Lys Phe Asn His Tyr Phe Asp Ala Leu Asn Ile Leu
35 40 45

Met Cys Asn Ile Cys Phe Cys Ile Lys Asn Thr His Ile Phe Gln Glu
50 55 60

Lys Glu Ile Met Leu Asn Ser Pro Val Leu Arg Lys Ile Phe Met Lys
65 70 75 80

His Leu Asn Leu Lys Ile Lys Ser Lys Leu

85 90

<210> 825
<211> 156
<212> PRT
<213> Homo sapiens

<400> 825
Ser Arg Arg Lys Met Ala Val Leu Ser Lys Glu Tyr Gly Phe Val Leu
1 5 10 15

Leu Thr Gly Ala Ala Ser Phe Ile Met Val Ala His Leu Ala Ile Asn
20 25 30

Val Ser Lys Ala Arg Lys Lys Tyr Lys Val Glu Tyr Pro Ile Met Tyr
35 40 45

Ser Thr Asp Pro Glu Asn Gly His Ile Phe Asn Cys Ile Gln Arg Ala
50 55 60

His Gln Asn Thr Leu Glu Val Tyr Pro Pro Phe Leu Phe Phe Leu Ala
65 70 75 80

Val Gly Gly Val Tyr His Pro Arg Ile Ala Ser Gly Leu Gly Leu Ala
85 90 95

Trp Ile Val Gly Arg Val Leu Tyr Ala Tyr Gly Tyr Tyr Thr Gly Glu
100 105 110

Pro Ser Lys Arg Ser Arg Gly Ala Leu Gly Ser Ile Ala Leu Leu Gly
115 120 125

Leu Val Gly Thr Thr Val Cys Ser Ala Phe Gln His Leu Gly Trp Val
130 135 140

Lys Ser Gly Leu Gly Ser Gly Pro Lys Cys Cys His
145 150 155

<210> 826
<211> 259
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (20)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 826

Ser Leu Thr Ser Tyr His Asn Gln Thr Phe Cys Ala Cys Ala Ile Val
1 5 10 15

Ala Ala Ile Xaa Ser Phe Gly Trp Asn Thr Val Lys Ile Asp Met Ser
20 25 30

Ala Ala Arg Arg Asp Pro Leu Pro Ile Val Pro Phe Gly Leu Ala Ala
35 40 45

Phe Ala Thr Thr Leu Phe Ala Leu Gly Leu Ala Leu Gly Thr Thr Ile
50 55 60

Ala Val Gly Met Leu Phe Phe Ile Gln Met Lys Ile Ile Leu Arg Asn
65 70 75 80

Lys Thr Ser Ile Glu Ser Trp Ile Glu Glu Lys Ala Lys Asp Arg Ile
85 90 95

Gln Tyr Tyr Gln Leu Asp Glu Val Phe Val Phe Pro Tyr Asp Met Gly
100 105 110

Ser Arg Trp Arg Asn Phe Lys Gln Val Phe Thr Trp Ser Gly Val Pro
115 120 125

Glu Gly Asp Gly Leu Glu Trp Pro Val Arg Glu Gly Cys His Gln Tyr
130 135 140

Ser Leu Thr Ile Glu Gln Leu Lys Gln Lys Ala Asp Lys Arg Val Arg
145 150 155 160

Ser Val Arg Tyr Lys Val Ile Glu Asp Tyr Ser Gly Ala Cys Cys Pro
165 170 175

Leu Asn Lys Gly Ile Lys Thr Phe Phe Thr Ser Pro Cys Thr Glu Glu
180 185 190

Pro Arg Ile Gln Leu Gln Lys Gly Glu Phe Ile Leu Ala Thr Arg Gly
195 200 205

Leu Arg Tyr Trp Leu Tyr Gly Asp Lys Ile Leu Asp Asp Ser Phe Ile
210 215 220

Glu Gly Val Ser Arg Ile Arg Gly Trp Phe Pro Arg Lys Cys Val Glu
225 230 235 240

Lys Cys Pro Cys Asp Ala Glu Thr Asp Gln Ala Pro Glu Gly Glu Lys
245 250 255

Lys Asn Arg

<210> 827
<211> 88
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (19)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (28)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (39)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (82)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 827
```
Glu Pro Trp Xaa Leu Leu Lys Ser Leu Leu Cys Arg Arg Ser Pro Ser
  1               5                  10                  15

Arg Thr Xaa Lys Gln Glu Glu Asp Arg Ala Thr Xaa Glu Ala Lys Asn
             20                  25                  30

Gly Glu Lys Ala Arg Arg Xaa Ser Xaa Glu Val Asp Gly Gln His Pro
         35                  40                  45

Ala Gln Glu Glu Val Pro Glu Ser Pro Gln Thr Ser Gly Pro Glu Gln
     50                  55                  60
```

Lys Ile Gly Val Gly Ala Pro Gly Arg Lys Ser Gln Leu Glu Arg Lys
65 70 75 80

Gln Xaa Trp Lys Arg Leu Gln Arg
85

<210> 828
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 828
Leu Pro Gly Val Phe Lys Met Ala Ala Ser Met His Gly Xaa Pro Ser
1 5 10 15

Pro Ser Leu Glu Asp Ala Lys Leu Arg Arg Pro Met Val Ile Glu Ile
20 25 30

Ile Glu Lys Asn Phe Asp Tyr Leu Arg Lys Glu Met Thr Gln Asn Ile
35 40 45

Tyr Gln Met Ala Thr Phe Gly Thr Thr Ala Gly Phe Ser Gly Ile Phe
50 55 60

Ser Asn Phe Leu Phe Arg Arg Cys Phe Lys Val Lys His Asp Ala Leu
65 70 75 80

Lys Thr Tyr Ala Ser Leu Ala Thr Leu Pro Phe Leu Ser Thr Val Val
85 90 95

Thr Asp Lys Leu Phe Val Ile Asp Ala Leu Tyr Ser Asp Asn Ile Ser
100 105 110

Lys Glu Asn Cys Val Phe Arg Ser Ser Leu Ile Gly Ile Val Cys Gly
115 120 125

Val Phe Tyr Pro Ser Ser Leu Ala Phe Thr Lys Asn Gly Arg Leu Ala
130 135 140

Thr Lys Tyr His Thr Val Pro Leu Pro Pro Lys Gly Arg Val Leu Ile
145 150 155 160

His Trp Met Thr Leu Cys Gln Thr Gln Met Lys Leu Met Ala Ile Pro

165 170 175

Leu Val Phe Gln Ile Met Phe Gly Ile Leu Asn Gly Leu Tyr His Tyr
180 185 190

Ala Val Phe Glu Glu Thr Leu Glu Lys Thr Ile His Glu Glu
195 200 205

<210> 829
<211> 78
<212> PRT
<213> Homo sapiens

<400> 829
Tyr Asn Ile Trp Phe Val Asn Ser Glu Thr Leu Pro Val Cys Leu Leu
1 5 10 15

Leu Ser Ile Glu Leu Val Phe Ser Phe Ser Trp Leu Ser Ser Cys Leu
20 25 30

Leu Ile Leu Ser His Met Leu Pro Ser Leu Leu Val Pro Ser Ser Leu
35 40 45

Leu Tyr Phe Thr Arg Phe Gly Thr Cys Ser Pro Leu Asp Phe Phe Phe
50 55 60

Asn Ile Leu Ala Phe Pro Arg Cys Lys Ser Leu Pro Pro Cys
65 70 75

<210> 830
<211> 101
<212> PRT
<213> Homo sapiens

<400> 830
Arg Phe Gly Arg Arg Thr Gly Arg Arg Trp Arg Arg Thr Thr Gly Gly
1 5 10 15

Ala Glu Gly Val Arg Gly Gly Asp Gly Arg Arg Gly Gly Pro Gly Pro
20 25 30

Leu Leu Ser Arg Val Gly Arg Leu Gly Leu Ala Asp Arg Ala Arg Ala
35 40 45

Phe Tyr Glu Asp Gly Gly Asp Glu Asp Ile Val Thr Ile Ser Gln Ala
50 55 60

Thr Pro Ser Ser Val Ser Arg Gly Thr Ala Pro Ser Asp Asn Arg Val
65 70 75 80

Thr Ser Phe Arg Asp Leu Ile His Asp Gln Asp Glu Asp Glu Glu Glu
85 90 95

Glu Glu Gly Gln Arg
100

<210> 831
<211> 155
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (64)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 831
Arg Cys Ser Ser Ile Phe Thr Pro Trp Lys Leu Thr Thr Leu Ser Ser
1 5 10 15

Phe Leu His His His Pro Gly Ala Gln Arg Ser Lys Leu Leu Ser Ile
20 25 30

Phe Ser Pro Ser Pro Arg Thr Leu Thr Leu Tyr Arg Met Gly Pro Ser
35 40 45

Ser Cys Leu Leu Leu Ile Leu Ile Pro Leu Leu Gln Leu Ile Asn Xaa
50 55 60

Gly Ser Thr Gln Cys Ser Leu Asp Ser Val Met Asp Lys Lys Ile Lys
65 70 75 80

Asp Val Leu Asn Ser Leu Glu Tyr Ser Pro Ser Pro Ile Ser Lys Lys
85 90 95

Leu Ser Cys Ala Ser Val Lys Ser Gln Gly Arg Pro Ser Ser Cys Pro
100 105 110

Ala Gly Met Ala Val Thr Gly Cys Ala Cys Gly Tyr Gly Cys Gly Ser
115 120 125

Trp Asp Val Gln Leu Glu Thr Thr Cys His Cys Gln Cys Ser Val Val
130 135 140

Asp Trp Thr Thr Ala Arg Cys Cys His Leu Thr
145 150 155

<210> 832
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (221)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 832
Tyr His Leu Tyr Phe Lys Met Gly Asp Pro Asn Ser Arg Lys Lys Gln
1 5 10 15

Ala Leu Asn Arg Leu Arg Ala Gln Leu Arg Lys Lys Lys Glu Ser Leu
20 25 30

Ala Asp Gln Phe Asp Phe Lys Met Tyr Ile Ala Phe Val Phe Lys Glu
35 40 45

Lys Lys Lys Lys Ser Ala Leu Phe Glu Val Ser Glu Val Ile Pro Val
50 55 60

Met Thr Asn Asn Tyr Glu Glu Asn Ile Leu Lys Gly Val Arg Asp Ser
65 70 75 80

Ser Tyr Ser Leu Glu Ser Ser Leu Glu Leu Leu Gln Lys Asp Val Val
85 90 95

Gln Leu His Ala Pro Arg Tyr Gln Ser Met Arg Arg Asp Val Ile Gly
100 105 110

Cys Thr Gln Glu Met Asp Phe Ile Leu Trp Pro Arg Asn Asp Ile Glu
115 120 125

Lys Ile Val Cys Leu Leu Phe Ser Arg Trp Lys Glu Ser Asp Glu Pro
130 135 140

Phe Arg Pro Val Gln Ala Lys Phe Glu Phe His His Gly Asp Tyr Glu
145 150 155 160

Lys Gln Phe Leu His Val Leu Ser Arg Lys Asp Lys Thr Gly Ile Val
165 170 175

Val Asn Asn Pro Asn Gln Ser Val Phe Leu Phe Ile Asp Arg Gln His
180 185 190

Leu Gln Thr Pro Lys Asn Lys Ala Thr Ile Phe Lys Leu Cys Ser Ile

195 200 205

Cys Leu Tyr Leu Pro Gln Glu Gln Leu Thr His Trp Xaa Ser Trp His
210 215 220

His Arg Gly Ser Pro Pro Ser Leu Tyr Ala Arg Val Glu Tyr
225 230 235

<210> 833
<211> 146
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (44)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 833
Asn Ser Ala Arg Ala Gln Met Ala Leu Glu Asp Gln Ala Ala Thr Leu
1 5 10 15

Glu Tyr Lys Thr Ile Lys Glu His Leu Ser Ser Lys Ser Pro Asn His
20 25 30

Gly Val Asn Leu Val Glu Asn Leu Asp Ser Leu Xaa Pro Lys Val Pro
35 40 45

Gln Arg Glu Ala Ser Leu Gly Pro Pro Gly Ala Ser Leu Ser Gln Thr
50 55 60

Gly Leu Ser Lys Arg Leu Glu Met His His Ser Ser Ser Tyr Gly Val
65 70 75 80

Asp Tyr Lys Arg Ser Tyr Pro Thr Asn Ser Leu Thr Arg Ser His Gln
85 90 95

Ala Pro Leu Ser Lys Glu Thr Thr Leu Thr Pro Pro Ile Pro Leu Thr
100 105 110

Ser Pro Glu Thr Arg Ala Leu Ala Gly Glu Thr Thr Arg Arg Pro Pro
115 120 125

Arg Arg Gly Trp Thr Pro Ser Arg Cys Thr Ala Pro Ser His Leu Ala
130 135 140

Arg Pro
145

<210> 834
<211> 239
<212> PRT
<213> Homo sapiens

<400> 834
Gln Pro Pro Gly Thr Arg Asp Pro Ala Pro Pro Leu Ile Thr Pro Ala
1 5 10 15

Thr Pro Gln Leu Ser Ala Ala Pro Asp Ala Met Asp Pro Ala Leu Ala
20 25 30

Ala Gln Met Ser Glu Ala Val Ala Glu Lys Met Leu Gln Tyr Arg Arg
35 40 45

Asp Thr Ala Gly Trp Lys Ile Cys Arg Glu Gly Asn Gly Val Ser Val
50 55 60

Ser Trp Arg Pro Ser Val Glu Phe Pro Gly Asn Leu Tyr Arg Gly Glu
65 70 75 80

Gly Ile Val Tyr Gly Thr Leu Glu Glu Val Trp Asp Cys Val Lys Pro
85 90 95

Ala Val Gly Gly Leu Arg Val Lys Trp Asp Glu Asn Val Thr Gly Phe
100 105 110

Glu Ile Ile Gln Ser Ile Thr Asp Thr Leu Cys Val Ser Arg Thr Ser
115 120 125

Thr Pro Ser Ala Ala Met Lys Leu Ile Ser Pro Arg Asp Phe Val Asp
130 135 140

Leu Val Leu Val Lys Arg Tyr Glu Asp Gly Thr Ile Ser Ser Asn Ala
145 150 155 160

Thr His Val Glu His Pro Leu Cys Pro Pro Lys Pro Gly Phe Val Arg
165 170 175

Gly Phe Asn His Pro Cys Gly Cys Phe Cys Glu Pro Leu Pro Gly Glu
180 185 190

Pro Thr Lys Thr Asn Leu Val Thr Phe Phe His Thr Asp Leu Ser Gly
195 200 205

Tyr Leu Pro Gln Asn Val Val Asp Ser Phe Phe Pro Arg Ser Met Thr
210 215 220

Arg Phe Tyr Ala Asn Leu Gln Lys Ala Val Lys Gln Phe His Glu

225 230 235

<210> 835
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (24)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 835
Gln Leu Thr Thr Val Arg Arg Leu Leu Ser Glu Lys Ala Thr His Val
1 5 10 15

Asn Thr Arg Asp Glu Asp Glu Xaa Thr Pro Leu His Arg Ala Ala Tyr
20 25 30

Ser Gly His Leu Asp Ile Val Gln Glu Leu Ile Ala Gln Gly Ala Asp
35 40 45

Val His Ala Val Thr Val Asp Gly Trp Thr Pro Leu His Ser Ala Cys
50 55 60

Lys Trp Asn Asn Thr Arg Val Ala Ser Phe Leu Leu Gln His Asp Ala
65 70 75 80

Asp Ile Asn Ala Gln Thr Lys Gly Leu Leu Thr Pro Leu His Leu Ala
85 90 95

Ala Gly Asn Arg Asp Ser Lys Asp Thr Leu Glu Leu Leu Leu Met Asn
100 105 110

Arg Tyr Val Lys Pro Gly Leu Lys Asn Asn Leu Glu Glu Thr Ala Phe
115 120 125

Asp Ile Ala Arg Arg Thr Ser Ile Tyr His Tyr Leu Phe Glu Ile Val
130 135 140

Glu Gly Cys Thr Asn Ser Ser Pro Gln Ser
145 150

<210> 836
<211> 77
<212> PRT
<213> Homo sapiens

<400> 836
Asn Thr Phe Ile His Glu Asp Ile Trp Asn Ile Arg Ser Ile Cys Ser
1   5   10   15

Thr Thr Asn Ile Gln Cys Lys Asn Gly Lys Met Asn Cys His Glu Gly
            20   25   30

Val Val Lys Val Thr Asp Cys Arg Asp Thr Gly Ser Ser Arg Ala Pro
        35   40   45

Asn Cys Arg Tyr Arg Ala Ile Ala Ser Thr Arg Arg Val Val Ile Ala
    50   55   60

Cys Glu Gly Asn Pro Gln Val Pro Val His Phe Asp Gly
65   70   75

<210> 837
<211> 84
<212> PRT
<213> Homo sapiens

<400> 837
Arg Asp Ala Pro Gly Ile Ser Leu Thr Val Leu Leu Pro His Gln Gln
1   5   10   15

Pro Pro Thr Phe Gly Pro Thr Leu Pro Pro Met Arg Glu Tyr Pro Ala
            20   25   30

Trp Met Leu Cys Phe Ser Gly Leu Ser Leu Ser Pro Phe Leu Gln Gly
        35   40   45

Met Leu Val Ser Leu Ala Ser Gln Cys Pro Asn Trp Ser Pro Glu Cys
    50   55   60

Leu Val Leu Ser Gln Glu Thr Ala Glu His Trp Pro Ser Thr Pro Lys
65   70   75   80

Arg Pro Leu His

<210> 838
<211> 96
<212> PRT
<213> Homo sapiens

<400> 838

Cys Phe Ser Leu Pro Ser Leu Phe Thr Ala Val Lys Phe Ile Lys Cys
1 5 10 15

Phe Ser Val Val Phe Cys Ser Leu Ser Phe Thr Gly Tyr Phe Phe Met
20 25 30

Tyr Thr Phe Arg Ile Phe Cys Leu Leu Tyr Pro Val Val Gln Met Ile
35 40 45

Ser Tyr Ile Leu Gln Met Pro Phe Gln Phe Leu Phe Ser Phe Ser Ile
50 55 60

Lys Leu Pro Ser Cys Pro Asn Val Gln Phe Val Ser Val Cys Val Cys
65 70 75 80

Val Cys Val Cys Val Asn Leu Ile Phe Lys Ser Ala Arg Leu Pro Ile
85 90 95

<210> 839
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (58)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 839
Xaa Gln Ala Thr Ala Ile Asn Thr Asp Val Asn Gly Cys Ile Cys Phe
1 5 10 15

Ala Val Val Thr Gly Leu Gly Arg Phe Gly Ile Cys Glu Arg Ile Asp
20 25 30

Ser Phe Ser Lys Leu Phe His Lys Val Lys Lys Leu His Phe Lys Gly
35 40 45

Asn Arg Ser Tyr Ser Ser Leu Lys Ser Xaa Ser Asn Cys Ser Phe Ile
50 55 60

<210> 840
<211> 288
<212> PRT
<213> Homo sapiens

<400> 840
Glu Ile Arg Val Ser Cys Thr Ala Gly Ala Gly Phe Pro Ala Ala Gln
1 5 10 15

Ala Arg Val Arg Cys Leu Cys His Leu Ile Leu Met Ser Gly Glu Ile
20 25 30

Ala Met Cys Glu Pro Glu Phe Gly Asn Asp Lys Ala Arg Glu Pro Ser
35 40 45

Val Gly Gly Arg Trp Arg Val Ser Trp Tyr Glu Arg Phe Val Gln Pro
50 55 60

Cys Leu Val Glu Leu Leu Gly Ser Ala Leu Phe Ile Phe Ile Gly Cys
65 70 75 80

Leu Ser Val Ile Glu Asn Gly Thr Asp Thr Gly Leu Leu Gln Pro Ala
85 90 95

Leu Ala His Gly Leu Ala Leu Gly Leu Val Ile Ala Thr Leu Gly Asn
100 105 110

Ile Ser Gly Gly His Phe Asn Pro Ala Val Ser Leu Ala Ala Met Leu
115 120 125

Ile Gly Gly Leu Asn Leu Val Met Leu Leu Pro Tyr Trp Val Ser Gln
130 135 140

Leu Leu Gly Gly Met Leu Gly Ala Ala Leu Ala Lys Ala Val Ser Pro
145 150 155 160

Glu Glu Arg Phe Trp Asn Ala Ser Gly Ala Ala Phe Val Thr Val Gln
165 170 175

Glu Gln Gly Gln Val Ala Gly Ala Leu Val Ala Glu Ile Ile Leu Thr
180 185 190

Thr Leu Leu Ala Leu Ala Val Cys Met Gly Ala Ile Asn Glu Lys Thr
195 200 205

Lys Gly Pro Leu Ala Pro Phe Ser Ile Gly Phe Ala Val Thr Val Asp

210 215 220

Ile Leu Ala Gly Gly Pro Val Ser Gly Gly Cys Met Asn Pro Ala Arg
225 230 235 240

Ala Phe Gly Pro Ala Val Val Ala Asn His Trp Asn Phe His Trp Ile
245 250 255

Tyr Trp Leu Gly Pro Leu Leu Ala Gly Leu Leu Val Gly Leu Leu Ile
260 265 270

Arg Cys Phe Ile Gly Asp Gly Lys Thr Arg Leu Ile Leu Lys Ala Gln
275 280 285

<210> 841
<211> 216
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 841
Gly Xaa Glu Gly Lys Gly Arg Glu Gly Gly Val Thr Arg Gly Arg Ala
1 5 10 15

Arg Ala Pro Gly Ala Ala Arg Arg Arg Val Glu Leu Asp Arg Val Cys
20 25 30

Cys Gln Arg Arg Glu Leu Arg Pro Pro Phe Tyr Asn Ser Ser Thr Arg
35 40 45

Ala Gly His Arg Glu Gln Arg Ala Arg Val Ser Arg Asn Pro Ile Pro
50 55 60

Ser Asp Arg Ile Ser Pro Pro Gln Pro Asn Gly Glu Ile Ser Gly Asn
65 70 75 80

Met Ala Thr Glu His Val Asn Gly Asn Gly Thr Glu Glu Pro Met Asp
85 90 95

Thr Thr Ser Ala Val Ile His Ser Glu Asn Phe Gln Thr Leu Leu Asp
100 105 110

Ala Gly Leu Pro Gln Lys Val Ala Glu Lys Leu Asp Glu Ile Tyr Val
115 120 125

Ala Gly Leu Val Ala His Ser Asp Leu Asp Glu Arg Ala Ile Glu Ala
130 135 140

Leu Lys Glu Phe Asn Glu Asp Gly Ala Leu Ala Val Leu Gln Gln Phe
145 150 155 160

Lys Asp Ser Asp Leu Ser His Val Gln Asn Lys Ser Ala Phe Leu Cys
165 170 175

Gly Val Met Lys Thr Tyr Arg Gln Arg Glu Lys Gln Gly Thr Lys Val
180 185 190

Ala Asp Ser Ser Lys Gly Pro Asp Glu Ala Lys Ile Lys Ala Leu Leu
195 200 205

Glu Arg Thr Gly Ser His Leu Met
210 215

<210> 842
<211> 189
<212> PRT
<213> Homo sapiens

<400> 842
Asp Ser Asp Gly Ser Pro Leu Ser Asn Ser Gln Pro Ser Phe Pro Val
1 5 10 15

Glu Ile Leu Pro Phe Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn
20 25 30

Leu Asp Val Leu Glu Glu Phe Gly Ile Lys Tyr Ile Leu Asn Val Thr
35 40 45

Pro Asn Leu Pro Asn Leu Phe Glu Asn Ala Gly Glu Phe Lys Tyr Lys
50 55 60

Gln Ile Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe
65 70 75 80

Pro Glu Ala Ile Ser Phe Ile Asp Glu Ala Arg Gly Lys Asn Cys Gly
85 90 95

Val Leu Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr
100 105 110

Val Ala Tyr Leu Met Gln Lys Leu Asn Leu Ser Met Asn Asp Ala Tyr

115 120 125

Asp Ile Val Lys Met Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe
130 135 140

Met Gly Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser Ser Pro
145 150 155 160

Cys Asp Asn Arg Val Pro Ala Gln Gln Leu Tyr Phe Thr Thr Pro Ser
165 170 175

Asn Gln Asn Val Tyr Gln Val Asp Ser Leu Gln Ser Thr
180 185

<210> 843
<211> 220
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (216)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 843
Asn Thr Pro Gly Phe Met Tyr Lys Asn Leu Gln Cys Leu Val Ile Asp
1 5 10 15

Glu Ala Asp Arg Ile Phe Asp Val Gly Phe Glu Glu Glu Leu Lys Gln
20 25 30

Ile Ile Lys Leu Leu Pro Thr Arg Arg Gln Thr Met Leu Phe Ser Ala
35 40 45

Thr Gln Thr Arg Lys Val Glu Asp Leu Ala Arg Ile Ser Leu Lys Lys
50 55 60

Glu Pro Leu Tyr Val Gly Val Asp Asp Asp Lys Ala Asn Ala Thr Val
65 70 75 80

Asp Gly Leu Glu Gln Lys Asn Arg Lys Lys Lys Leu Met Val Phe Phe
85 90 95

Ser Ser Cys Met Ser Val Lys Tyr His Tyr Glu Leu Leu Asn Tyr Ile
100 105 110

Asp Leu Pro Val Leu Ala Ile His Gly Lys Gln Lys Gln Asn Lys Arg
115 120 125

```
Thr Thr Thr Phe Phe Gln Phe Cys Asn Ala Asp Ser Gly Thr Leu Leu
    130                 135                 140

Cys Thr Asp Val Ala Ala Arg Gly Leu Asp Ile Pro Glu Val Asp Trp
145                 150                 155                 160

Ile Val Gln Tyr Asp Pro Pro Asp Asp Pro Lys Glu Tyr Ile His Arg
                165                 170                 175

Val Gly Arg Thr Ala Arg Gly Leu Asn Gly Arg Gly His Ala Leu Leu
            180                 185                 190

Ile Leu Arg Pro Glu Glu Leu Gly Phe Leu Arg Tyr Leu Lys Gln Ser
        195                 200                 205

Lys Val Pro Leu Ser Glu Phe Xaa Leu Phe Leu Val
    210                 215                 220
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<210> 844
<211> 83
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (40)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 844
Arg Pro Pro Phe Val Pro Lys His Pro Ala His Ala Asp Ser Leu Leu
  1               5                  10                  15

Gly Ser Leu Arg Tyr Leu Ser Thr Gln Thr Leu Leu Pro His Pro Ile
            20                  25                  30

Ser Pro Glu Thr Pro Ala Phe Xaa Leu Thr Ile Phe Pro Leu Pro Ala
        35                  40                  45

Phe Arg Phe Leu Leu Gly Ala Gln Arg Pro Leu Trp Gly Val Ala Ser
    50                  55                  60

Ser Pro Pro Thr Pro Pro His Pro Pro Pro Leu Pro Arg Gln Ala Ser
 65                  70                  75                  80

Pro Cys Arg
```

<210> 845
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (15)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (32)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 845
Xaa Ser Ser Arg Thr Cys Glu Gly Arg Val Leu Ser Ser Val Xaa Pro
1 5 10 15

Leu Ala His Val Ala Ser Val Phe Leu Lys Leu Pro Asp Leu Glu Xaa
20 25 30

Leu Met Lys Arg Glu Asn Gln Lys Ile Leu Thr Pro Leu Val Ser Leu
35 40 45

Asp Thr Pro Gly Lys Ala Thr Val Gln Val Val Ile Leu Ala Asp Pro
50 55 60

Asp Gly His Glu Ile Cys Phe Val Gly Asp Glu Ala Phe Arg Glu Leu
65 70 75 80

Ser Lys Met Asp Pro Glu Gly Ser Lys Leu Leu Asp Asp Ala Met Ala
85 90 95

Ala Asp Lys Ser Asp Glu Trp Phe Ala Lys His Asn Lys Pro Lys Ala
100 105 110

Ser Gly

<210> 846
<211> 68
<212> PRT
<213> Homo sapiens

<400> 846

Ser Asn Gly Ser Ile Cys Leu Asp Ile Leu Arg Ser Gln Trp Ser Pro
1 5 10 15

Ala Leu Thr Val Ser Lys Val Leu Leu Ser Ile Cys Ser Leu Leu Cys
20 25 30

Asp Pro Asn Pro Asp Asp Pro Leu Val Pro Glu Ile Ala His Thr Tyr
35 40 45

Lys Ala Asp Arg Glu Lys Tyr Asn Arg Leu Ala Arg Glu Trp Thr Gln
50 55 60

Lys Tyr Ala Met
65

<210> 847
<211> 365
<212> PRT
<213> Homo sapiens

<400> 847

Gly Arg Val Gly Ser Pro Gly Gly Cys Pro Trp Val Leu Pro Ser Leu
1 5 10 15

Pro Asp Thr Gln Thr Asp Leu Asp Arg Pro Pro Gly Arg Ser Arg Thr
20 25 30

Gly Arg Pro Asp Ala Ala Met Ala Glu Leu Pro Gly Pro Phe Leu Cys
35 40 45

Gly Ala Leu Leu Gly Phe Leu Cys Leu Ser Gly Leu Ala Val Glu Val
50 55 60

Lys Val Pro Thr Glu Pro Leu Ser Thr Pro Leu Gly Lys Thr Ala Glu
65 70 75 80

Leu Thr Cys Thr Tyr Ser Thr Ser Val Gly Asp Ser Phe Ala Leu Glu
85 90 95

Trp Ser Phe Val Gln Pro Gly Lys Pro Ile Ser Glu Ser His Pro Ile
100 105 110

Leu Tyr Phe Thr Asn Gly His Leu Tyr Pro Thr Gly Ser Lys Ser Lys
115 120 125

Arg Val Ser Leu Leu Gln Asn Pro Pro Thr Val Gly Val Ala Thr Leu
130 135 140

Lys Leu Thr Asp Val His Pro Ser Asp Thr Gly Thr Tyr Leu Cys Gln
145 150 155 160

Val Asn Asn Pro Pro Asp Phe Tyr Thr Asn Gly Leu Gly Leu Ile Asn
165 170 175

Leu Thr Val Leu Val Pro Pro Ser Asn Pro Leu Cys Ser Gln Ser Gly
180 185 190

Gln Thr Ser Val Gly Gly Ser Thr Ala Leu Arg Cys Ser Ser Ser Glu
195 200 205

Gly Ala Pro Lys Pro Val Tyr Asn Trp Val Arg Leu Gly Thr Phe Pro
210 215 220

Thr Pro Ser Pro Gly Ser Met Val Gln Asp Glu Val Ser Gly Gln Leu
225 230 235 240

Ile Leu Thr Asn Leu Ser Leu Thr Ser Ser Gly Thr Tyr Arg Cys Val
245 250 255

Ala Thr Asn Gln Met Gly Ser Ala Ser Cys Glu Leu Thr Leu Ser Val
260 265 270

Thr Glu Pro Ser Gln Gly Arg Val Ala Gly Ala Leu Ile Gly Val Leu
275 280 285

Leu Gly Val Leu Leu Leu Ser Val Ala Ala Phe Cys Leu Val Arg Phe
290 295 300

Gln Lys Glu Arg Gly Lys Lys Pro Lys Glu Thr Tyr Gly Gly Ser Asp
305 310 315 320

Leu Arg Glu Asp Ala Ile Ala Pro Gly Ile Ser Glu His Thr Cys Met
325 330 335

Arg Ala Asp Ser Ser Lys Gly Phe Leu Glu Arg Pro Ser Ser Ala Ser
340 345 350

Thr Val Thr Thr Thr Lys Ser Lys Leu Pro Met Val Val
355 360 365

<210> 848
<211> 215
<212> PRT
<213> Homo sapiens

<400> 848

Leu Asp His Ile Val Asp Lys Val Lys Glu Cys Val Asp His Leu Ser
1 5 10 15

Arg Asp Glu Asp Glu Glu Lys Leu Val Ala Ser Leu Trp Gly Ala Glu
20 25 30

Arg Cys Leu Arg Val Leu Glu Ser Val Thr Val His Asn Pro Glu Asn
35 40 45

Gln Ser Tyr Leu Ile Ala Tyr Lys Asp Ser Gln Leu Ile Val Ser Ser
50 55 60

Ala Lys Ala Leu Gln His Cys Glu Glu Leu Ile Gln Gln Tyr Asn Arg
65 70 75 80

Ala Glu Asp Ser Ile Cys Leu Ala Asp Ser Lys Pro Leu Pro His Gln
85 90 95

Asn Val Thr Asn His Val Gly Lys Ala Val Glu Asp Cys Met Arg Ala
100 105 110

Ile Ile Gly Val Leu Leu Asn Leu Thr Asn Asp Asn Glu Trp Gly Ser
115 120 125

Thr Lys Thr Gly Glu Gln Asp Gly Leu Ile Gly Thr Ala Leu Asn Cys
130 135 140

Val Leu Gln Val Pro Lys Tyr Leu Pro Gln Glu Gln Arg Phe Asp Ile
145 150 155 160

Arg Val Leu Gly Leu Gly Leu Leu Ile Asn Leu Val Glu Tyr Ser Ala
165 170 175

Arg Asn Arg His Cys Leu Val Asn Met Glu Thr Ser Cys Ser Phe Asp
180 185 190

Ser Ser Ile Cys Ser Gly Glu Gly Asp Asp Ser Leu Arg Ile Gly Gly
195 200 205

Gln Val His Ala Val Gln Leu
210 215

<210> 849
<211> 368
<212> PRT
<213> Homo sapiens

<400> 849
Gly Lys Ala Glu Gly Val Cys Gly Leu Ser His Arg Gln Glu Cys Gln

1 5 10 15

Asp Pro Ala Gly Ala Leu Glu Ser Leu Arg Leu Ala Leu Ala Ser Arg
20 25 30

Leu Leu Pro Asp Phe Leu Leu Glu Arg Arg Leu Thr Leu Ala Asp Ala
35 40 45

Leu Glu Lys Cys Leu Lys Lys Gly Lys Gly Glu Glu Gln Ala Leu Ala
50 55 60

Ala Ala Val Leu Gly Leu Leu Cys Val Gln Leu Gly Pro Gly Pro Lys
65 70 75 80

Gly Glu Glu Leu Phe His Ser Leu Gln Pro Leu Leu Val Ser Val Leu
85 90 95

Ser Asp Ser Thr Ala Ser Pro Ala Ala Arg Leu His Cys Ala Ser Ala
100 105 110

Leu Gly Leu Gly Cys Tyr Val Ala Ala Ala Asp Ile Gln Asp Leu Val
115 120 125

Ser Cys Leu Ala Cys Leu Glu Ser Val Phe Ser Arg Phe Tyr Gly Leu
130 135 140

Gly Gly Ser Ser Thr Ser Pro Val Val Pro Ala Ser Leu His Gly Leu
145 150 155 160

Leu Ser Ala Ala Leu Gln Ala Trp Ala Leu Leu Leu Thr Ile Cys Pro
165 170 175

Ser Thr Gln Ile Ser His Ile Leu Asp Arg Gln Leu Pro Arg Leu Pro
180 185 190

Gln Leu Leu Ser Ser Glu Ser Val Asn Leu Arg Ile Ala Ala Gly Glu
195 200 205

Thr Ile Ala Leu Leu Phe Glu Leu Ala Arg Asp Leu Glu Glu Glu Phe
210 215 220

Val Tyr Glu Asp Met Glu Ala Leu Cys Ser Val Leu Arg Thr Leu Ala
225 230 235 240

Thr Asp Ser Asn Lys Tyr Arg Ala Lys Ala Asp Arg Arg Arg Gln Arg
245 250 255

Ser Thr Phe Arg Ala Val Leu His Ser Val Glu Gly Gly Glu Cys Glu
260 265 270

Glu Glu Ile Val Arg Phe Gly Phe Glu Val Leu Tyr Met Asp Ser Trp

```
        275                 280                 285

Ala Arg His Arg Ile Tyr Ala Ala Phe Lys Glu Val Leu Gly Ser Gly
    290                 295                 300

Met His His His Leu Gln Asn Asn Glu Leu Leu Arg Asp Ile Phe Gly
305                 310                 315                 320

Leu Gly Pro Val Leu Leu Leu Asp Ala Thr Ala Leu Lys Ala Cys Lys
                325                 330                 335

Val Pro Arg Phe Glu Lys His Leu Tyr Asn Ala Ala Ala Phe Lys Ala
            340                 345                 350

Arg Thr Lys Ala Arg Ser Arg Val Arg Asp Lys Arg Ala Asp Ile Leu
        355                 360                 365
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<210> 850
<211> 218
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (96)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (105)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (180)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (190)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (194)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (207)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 850
Ala Ser Ala Ser Ile Cys Ser Gly Ile Lys Tyr Ala Phe Gln Val Ile
1 5 10 15

Gly Glu Leu His Ser Gln Leu Asp Gly Ser Glu Val Leu Leu Leu Thr
20 25 30

Asp Gly Glu Asp Asn Thr Ala Ser Ser Cys Ile Asp Glu Val Lys Gln
35 40 45

Ser Gly Ala Ile Val His Phe Ile Ala Leu Gly Arg Ala Ala Asp Glu
50 55 60

Ala Val Ile Glu Met Ser Lys Ile Thr Gly Gly Ser His Phe Tyr Val
65 70 75 80

Ser Asp Glu Ala Gln Asn Asn Gly Leu Ile Asp Ala Phe Gly Ala Xaa
85 90 95

Thr Ser Gly Asn Thr Asp Leu Ser Xaa Lys Ser Leu Gln Leu Glu Ser
100 105 110

Lys Gly Leu Thr Leu Asn Ser Asn Ala Trp Met Asn Asp Thr Val Ile
115 120 125

Ile Asp Ser Thr Val Gly Lys Asp Thr Phe Phe Leu Ile Thr Trp Asn
130 135 140

Ser Leu Pro Pro Ser Ile Ser Leu Trp Asp Pro Ser Gly Thr Ile Met
145 150 155 160

Glu Asn Phe Thr Val Asp Ala Thr Ser Lys Met Ala Tyr Leu Ser Ile
165 170 175

Pro Gly Thr Xaa Lys Val Gly Thr Trp Ala Tyr Asn Leu Xaa Ala Lys
180 185 190

Ala Xaa Pro Glu Thr Leu Thr Ile Thr Val Thr Ser Arg Ala Xaa Lys
195 200 205

Phe Phe Cys Ala Ser Asn His Ser Glu Cys
210 215

<210> 851
<211> 303
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (133)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (255)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 851

```
Gly Cys Leu Gly Gln Thr Arg Pro Ala Ser Pro Arg Thr Ala Arg Glu
  1               5                  10                  15

Ser Val Leu Gly Val Ser Gln Asn Met Ser Phe Asn Leu Gln Ser Ser
             20                  25                  30

Lys Lys Leu Phe Ile Phe Leu Gly Lys Ser Leu Phe Ser Leu Leu Glu
         35                  40                  45

Ala Met Ile Phe Ala Leu Leu Pro Lys Pro Arg Lys Asn Val Ala Gly
     50                  55                  60

Glu Ile Val Leu Ile Thr Gly Ala Gly Ser Gly Leu Gly Arg Leu Leu
 65                  70                  75                  80

Ala Leu Gln Phe Ala Arg Leu Gly Ser Val Leu Val Leu Trp Asp Ile
                 85                  90                  95

Asn Lys Glu Gly Asn Glu Glu Thr Cys Lys Met Ala Arg Glu Ala Gly
            100                 105                 110

Ala Thr Arg Val His Ala Tyr Thr Cys Asp Cys Ser Gln Lys Glu Gly
        115                 120                 125

Val Tyr Arg Val Xaa Asp Gln Val Lys Lys Glu Val Gly Asp Val Ser
    130                 135                 140

Ile Leu Ile Asn Asn Ala Gly Ile Val Thr Gly Lys Lys Phe Leu Asp
145                 150                 155                 160

Cys Pro Asp Glu Leu Met Glu Lys Ser Phe Asp Val Asn Phe Lys Ala
                165                 170                 175

His Leu Trp Thr Tyr Lys Ala Phe Leu Pro Ala Met Ile Ala Asn Asp
            180                 185                 190
```

His Gly His Leu Val Cys Ile Ser Ser Ser Ala Gly Leu Ser Gly Val
195 200 205

Asn Gly Leu Ala Asp Tyr Cys Ala Ser Lys Phe Ala Ala Phe Gly Phe
210 215 220

Ala Glu Ser Val Phe Val Glu Thr Phe Val Gln Lys Gln Lys Gly Ile
225 230 235 240

Lys Thr Thr Ile Val Cys Pro Phe Phe Ile Lys Thr Gly Met Xaa Glu
245 250 255

Gly Cys Thr Thr Gly Cys Pro Ser Leu Leu Pro Ile Leu Glu Pro Lys
260 265 270

Tyr Ala Val Glu Lys Ile Val Glu Ala Ile Leu Gln Glu Lys Met Tyr
275 280 285

Leu Tyr Met Pro Lys Leu Leu Tyr Phe Met Met Phe Leu Lys Arg
290 295 300

<210> 852
<211> 340
<212> PRT
<213> Homo sapiens

<400> 852
Arg Thr Val Ile Asp Ala Met Ser Ala Leu Leu Arg Leu Leu Arg Thr
1 5 10 15

Gly Ala Pro Ala Ala Ala Cys Leu Arg Leu Gly Thr Ser Ala Gly Thr
20 25 30

Gly Ser Arg Arg Ala Met Ala Leu Tyr His Thr Glu Glu Arg Gly Gln
35 40 45

Pro Cys Ser Gln Asn Tyr Arg Leu Phe Phe Lys Asn Val Thr Gly His
50 55 60

Tyr Ile Ser Pro Phe His Asp Ile Pro Leu Lys Val Asn Ser Lys Glu
65 70 75 80

Glu Asn Gly Ile Pro Met Lys Lys Ala Arg Asn Asp Glu Tyr Glu Asn
85 90 95

Leu Phe Asn Met Ile Val Glu Ile Pro Arg Trp Thr Asn Ala Lys Met
100 105 110

Glu Ile Ala Thr Lys Glu Pro Met Asn Pro Ile Lys Gln Tyr Val Lys
115 120 125

Asp Gly Lys Leu Arg Tyr Val Ala Asn Ile Phe Pro Tyr Lys Gly Tyr
130 135 140

Ile Trp Asn Tyr Gly Thr Leu Pro Gln Thr Trp Glu Asp Pro His Glu
145 150 155 160

Lys Asp Lys Ser Thr Asn Cys Phe Gly Asp Asn Asp Pro Ile Asp Val
165 170 175

Cys Glu Ile Gly Ser Lys Ile Leu Ser Cys Gly Glu Val Ile His Val
180 185 190

Lys Ile Leu Gly Ile Leu Ala Leu Ile Asp Glu Gly Glu Thr Asp Trp
195 200 205

Lys Leu Ile Ala Ile Asn Ala Asn Asp Pro Glu Ala Ser Lys Phe His
210 215 220

Asp Ile Asp Asp Val Lys Lys Phe Lys Pro Gly Tyr Leu Glu Ala Thr
225 230 235 240

Leu Asn Trp Phe Arg Leu Tyr Lys Val Pro Asp Gly Lys Pro Glu Asn
245 250 255

Gln Phe Ala Phe Asn Gly Glu Phe Lys Asn Lys Ala Phe Ala Leu Glu
260 265 270

Val Ile Lys Ser Thr His Gln Cys Trp Lys Ala Leu Leu Met Lys Lys
275 280 285

Cys Asn Gly Gly Ala Ile Asn Cys Thr Asn Val Gln Ile Ser Asp Ser
290 295 300

Pro Phe Arg Cys Thr Gln Glu Glu Ala Arg Ser Leu Val Glu Ser Val
305 310 315 320

Ser Ser Ser Pro Asn Lys Glu Ser Asn Glu Glu Glu Gln Val Trp His
325 330 335

Phe Leu Gly Lys
340

<210> 853
<211> 317
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (165)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 853

Ala Asp Leu Ile Ser Leu Pro Thr Thr Val Glu Gly Leu Gln Lys Ser
1 5 10 15

Val Ala Ser Ile Gly Asn Thr Leu Asn Ser Val His Leu Ala Val Glu
20 25 30

Ala Leu Gln Lys Thr Val Asp Glu His Lys Lys Thr Met Glu Leu Leu
35 40 45

Gln Ser Asp Met Asn Gln His Phe Leu Lys Glu Thr Pro Gly Ser Asn
50 55 60

Gln Ile Ile Pro Ser Pro Ser Ala Thr Ser Glu Leu Asp Asn Lys Thr
65 70 75 80

His Ser Glu Asn Leu Lys Gln Asp Ile Leu Tyr Leu His Asn Ser Leu
85 90 95

Glu Glu Val Asn Ser Ala Leu Val Gly Tyr Gln Arg Gln Asn Asp Leu
100 105 110

Lys Leu Glu Gly Met Asn Glu Thr Val Ser Asn Leu Thr Gln Arg Val
115 120 125

Asn Leu Ile Glu Ser Asp Val Val Ala Met Ser Lys Val Glu Lys Lys
130 135 140

Ala Asn Leu Ser Phe Ser Met Met Gly Asp Arg Ser Ala Thr Leu Lys
145 150 155 160

Arg Gln Ser Leu Xaa Gln Val Thr Asn Arg Thr Asp Thr Val Lys Ile
165 170 175

Gln Ser Ile Lys Lys Glu Asp Ser Ser Asn Ser Gln Val Ser Lys Leu
180 185 190

Arg Glu Lys Leu Gln Leu Ile Ser Ala Leu Thr Asn Lys Pro Glu Ser
195 200 205

Asn Arg Pro Pro Glu Thr Ala Asp Glu Glu Gln Val Glu Ser Phe Thr
210 215 220

Ser Lys Pro Ser Ala Leu Pro Lys Phe Ser Gln Phe Leu Gly Asp Pro
225 230 235 240

Val Glu Lys Ala Ala Gln Leu Arg Pro Ile Ser Leu Pro Gly Val Ser
245 250 255

Ser Thr Glu Asp Leu Gln Asp Leu Phe Arg Lys Thr Gly Gln Asp Val
260 265 270

Asp Gly Lys Leu Thr Tyr Gln Glu Ile Trp Thr Ser Leu Gly Ser Ala
275 280 285

Met Pro Glu Pro Glu Ser Leu Arg Ala Phe Asp Ser Asp Gly Asp Gly
290 295 300

Arg Tyr Ser Phe Leu Glu Leu Arg Val Ala Leu Gly Ile
305 310 315

<210> 854
<211> 34
<212> PRT
<213> Homo sapiens

<400> 854
Leu Leu Phe Asn Phe Lys Gln Val Phe Phe Ala Ser Val Arg Ser Gly
1 5 10 15

Gly Ser Ser Gln Val Phe Phe Met Thr Leu Asn Arg Asn Ser Met Met
20 25 30

Asn Trp

<210> 855
<211> 232
<212> PRT
<213> Homo sapiens

<400> 855
Leu Pro Val Pro Gly Arg Gly Arg Val Phe Phe Glu Asp Leu Gly Leu
1 5 10 15

Arg Asp Thr Val Arg Met Ala Val Val Pro Leu Leu Leu Leu Gly Gly
20 25 30

Leu Trp Ser Ala Val Gly Ala Ser Ser Leu Gly Val Val Thr Cys Gly
35 40 45

Ser Val Val Lys Leu Leu Asn Thr Arg His Asn Val Arg Leu His Ser

50 55 60

His Asp Val Arg Tyr Gly Ser Gly Ser Gly Gln Gln Ser Val Thr Gly
65 70 75 80

Val Thr Ser Val Asp Asp Ser Asn Ser Tyr Trp Arg Ile Arg Gly Lys
85 90 95

Ser Ala Thr Val Cys Glu Arg Gly Thr Pro Ile Lys Cys Gly Gln Pro
100 105 110

Ile Arg Leu Thr His Val Asn Thr Gly Arg Asn Leu His Ser His His
115 120 125

Phe Thr Ser Pro Leu Ser Gly Asn Gln Glu Val Ser Ala Phe Gly Glu
130 135 140

Glu Gly Glu Gly Asp Tyr Leu Asp Asp Trp Thr Val Leu Cys Asn Gly
145 150 155 160

Pro Tyr Trp Val Arg Asp Gly Glu Val Arg Phe Lys His Ser Ser Thr
165 170 175

Glu Val Leu Leu Ser Val Thr Gly Glu Gln Tyr Gly Arg Pro Ile Ser
180 185 190

Gly Gln Lys Glu Val His Gly Met Ala Gln Pro Ser Gln Asn Asn Tyr
195 200 205

Trp Lys Ala Met Glu Gly Ile Phe Met Lys Pro Ser Glu Leu Leu Lys
210 215 220

Ala Glu Ala His His Ala Glu Leu
225 230

<210> 856
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 856
Cys Phe Ser Ser Ser Gly Phe Thr Cys His Asp His Gly Ala Thr Val
1 5 10 15

Leu Gln Tyr Ala Pro Lys Gln Gln Leu Leu Ile Ser Gly Gly Arg Lys
20 25 30

Arg His Val Cys Ile Phe Asp Ile Xaa Gln Arg Gln Leu Ile His Thr
35 40 45

Phe Gln Ala His Asp Ser Ala Ile Lys Ala Leu Ala Leu Asp Pro Tyr
50 55 60

Glu Glu Tyr Phe Thr Thr Gly Ser Ala Glu Gly Asn Ile Lys Val Trp
65 70 75 80

Arg Leu Thr Gly His Gly Leu Ile His Ser Phe Lys Ser Glu His Ala
85 90 95

Lys Gln Ser Ile Phe Arg Asn Ile Gly Ala Gly Val Met Gln Ile Asp
100 105 110

Ile Ile Gln Gly Asn Arg Leu Phe Ser Cys Gly Ala Asp Gly Thr Leu
115 120 125

Lys Thr Arg Val Leu Pro Asn Ala Phe Asn Ile Pro Asn Arg Ile Leu
130 135 140

Asp Ile Leu
145

<210> 857
<211> 96
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (59)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (61)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (63)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 857
Pro Arg Val Arg Ile Asn Lys Glu Ser Glu Val Tyr Lys Met Leu Gln

1   5   10   15

Glu Lys Gln Glu Leu Asn Glu Pro Leu Lys Gln Ser Thr Ser Phe Leu
            20   25   30

Ile Leu Gln Glu Ile Leu Glu Ser Glu Ile Lys Gly Asp Leu Asn Asn
        35   40   45

Pro Gln Asp Ser Glu Val Leu Lys Leu Leu Xaa Pro Xaa Val Xaa Ala
    50   55   60

Ser Ile Gly Asn Ala Gln Lys Val Pro Met Cys Asp Lys Cys Gly Pro
65   70   75   80

Gly Ile Val Gly Met Phe Val Lys Leu Arg Gly Pro Ser Ser Pro Pro
                85   90   95

<210> 858
<211> 45
<212> PRT
<213> Homo sapiens

<400> 858
Asp Thr Ser Glu Ala Ile Leu Thr Ser Glu Tyr Pro Ser Ser Ser Leu
1   5   10   15

Lys Thr Glu Thr Ser His Leu Glu Asn Val Asn Leu Cys Cys His Leu
            20   25   30

Val Ala Gly Val Ser Arg His Lys Thr Glu Phe Lys Lys
        35   40   45

<210> 859
<211> 758
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (590)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 859
Lys Met Ser Glu Asn Ser Ser Asp Ser Asp Ser Ser Cys Gly Trp Thr

```
1               5                   10                  15
Val Ile Ser His Glu Gly Ser Asp Ile Glu Met Leu Asn Ser Val Thr
            20                  25                  30
Pro Thr Asp Ser Cys Glu Pro Ala Pro Glu Cys Ser Ser Leu Glu Gln
        35                  40                  45
Glu Glu Leu Gln Ala Leu Gln Ile Glu Gln Gly Glu Ser Ser Gln Asn
    50                  55                  60
Gly Thr Val Leu Met Glu Glu Thr Ala Tyr Pro Ala Leu Glu Glu Thr
65                  70                  75                  80
Ser Ser Thr Ile Glu Ala Glu Glu Gln Lys Ile Pro Glu Asp Ser Ile
                85                  90                  95
Tyr Ile Gly Thr Ala Ser Asp Asp Ser Asp Ile Val Thr Leu Glu Pro
            100                 105                 110
Pro Lys Leu Glu Glu Ile Gly Asn Gln Glu Val Val Ile Val Glu Glu
        115                 120                 125
Ala Gln Ser Ser Glu Asp Phe Asn Met Gly Ser Ser Ser Ser Ser Gln
    130                 135                 140
Tyr Thr Phe Cys Gln Pro Glu Thr Val Phe Ser Ser Gln Pro Ser Asp
145                 150                 155                 160
Asp Glu Ser Ser Ser Asp Glu Thr Ser Asn Gln Pro Ser Pro Ala Phe
                165                 170                 175
Arg Arg Arg Arg Ala Arg Lys Lys Thr Val Ser Ala Ser Glu Ser Glu
            180                 185                 190
Asp Arg Leu Val Ala Glu Gln Glu Thr Glu Pro Ser Lys Glu Leu Ser
        195                 200                 205
Lys Arg Gln Phe Ser Ser Gly Leu Asn Lys Cys Val Ile Leu Ala Leu
    210                 215                 220
Val Ile Ala Ile Ser Met Gly Phe Gly His Phe Tyr Gly Thr Ile Gln
225                 230                 235                 240
Ile Gln Lys Arg Gln Gln Leu Val Arg Lys Ile His Glu Asp Glu Leu
                245                 250                 255
Asn Asp Met Lys Asp Tyr Leu Ser Gln Cys Gln Gln Glu Gln Glu Ser
            260                 265                 270
Phe Ile Asp Tyr Lys Ser Leu Lys Glu Asn Leu Ala Arg Cys Trp Thr
```

275 280 285

Leu Thr Glu Ala Glu Lys Met Ser Phe Glu Thr Gln Lys Thr Asn Leu
290 295 300

Ala Thr Glu Asn Gln Tyr Leu Arg Val Ser Leu Glu Lys Glu Glu Lys
305 310 315 320

Ala Leu Ser Ser Leu Gln Glu Glu Leu Asn Lys Leu Arg Glu Gln Ile
325 330 335

Arg Ile Leu Glu Asp Lys Gly Thr Ser Thr Glu Leu Val Lys Glu Asn
340 345 350

Gln Lys Leu Lys Gln His Leu Glu Glu Glu Lys Gln Lys Lys His Ser
355 360 365

Phe Leu Ser Gln Arg Glu Thr Leu Leu Thr Glu Ala Lys Met Leu Lys
370 375 380

Arg Glu Leu Glu Arg Glu Arg Leu Val Thr Thr Ala Leu Arg Gly Glu
385 390 395 400

Leu Gln Gln Leu Ser Gly Ser Gln Leu His Gly Lys Ser Asp Ser Pro
405 410 415

Asn Val Tyr Thr Glu Lys Lys Glu Ile Ala Ile Leu Arg Glu Arg Leu
420 425 430

Thr Glu Leu Glu Arg Lys Leu Thr Phe Glu Gln Gln Arg Ser Asp Leu
435 440 445

Trp Glu Arg Leu Tyr Val Glu Ala Lys Asp Gln Asn Gly Lys Gln Gly
450 455 460

Thr Asp Gly Lys Lys Lys Gly Gly Arg Gly Ser His Arg Ala Lys Asn
465 470 475 480

Lys Ser Lys Glu Thr Phe Leu Gly Ser Val Lys Glu Thr Phe Asp Ala
485 490 495

Met Lys Asn Ser Thr Lys Glu Phe Val Arg His His Lys Glu Lys Ile
500 505 510

Lys Gln Ala Lys Glu Ala Val Lys Glu Asn Leu Lys Lys Phe Ser Asp
515 520 525

Ser Val Lys Ser Thr Phe Arg His Phe Lys Asp Thr Thr Lys Asn Ile
530 535 540

Phe Asp Glu Lys Gly Asn Lys Arg Phe Gly Ala Thr Lys Glu Ala Ala

545 550 555 560

Glu Lys Pro Arg Thr Val Phe Ser Asp Tyr Leu His Pro Gln Tyr Lys
565 570 575

Ala Pro Thr Glu Asn His His Asn Arg Gly Pro Thr Met Xaa Asn Asp
580 585 590

Gly Arg Lys Glu Lys Pro Val His Phe Lys Glu Phe Arg Lys Asn Thr
595 600 605

Asn Ser Lys Lys Cys Ser Pro Gly His Asp Cys Arg Glu Asn Ser His
610 615 620

Ser Phe Arg Lys Ala Cys Ser Gly Val Phe Asp Cys Ala Gln Gln Glu
625 630 635 640

Ser Met Ser Leu Phe Asn Thr Val Val Asn Pro Ile Arg Met Asp Glu
645 650 655

Phe Arg Gln Ile Ile Gln Arg Tyr Met Leu Lys Glu Leu Asp Thr Phe
660 665 670

Cys His Trp Asn Glu Leu Asp Gln Phe Ile Asn Lys Phe Phe Leu Asn
675 680 685

Gly Val Phe Ile His Asp Gln Lys Leu Phe Thr Asp Phe Val Asn Asp
690 695 700

Val Lys Asp Tyr Leu Arg Asn Met Lys Glu Tyr Glu Val Asp Asn Asp
705 710 715 720

Gly Val Phe Glu Lys Leu Asp Glu Tyr Ile Tyr Arg His Phe Phe Gly
725 730 735

His Thr Phe Ser Pro Pro Tyr Gly Pro Arg Ser Val Tyr Ile Lys Pro
740 745 750

Cys His Tyr Ser Ser Leu
755

<210> 860
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (174)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 860

Ala Gly Val His Thr Ile Ser Phe Leu Gly Gly Leu Ala Leu Asn Glu
1   5   10   15

Gly Val Asn Trp Leu Ile Lys Asn Val Ile Gln Glu Pro Arg Pro Cys
            20   25   30

Gly Gly Pro His Thr Ala Val Gly Thr Lys Tyr Gly Met Pro Ser Ser
        35   40   45

His Ser Gln Phe Met Trp Phe Phe Ser Val Tyr Ser Phe Leu Phe Leu
    50   55   60

Tyr Leu Arg Met His Gln Thr Asn Asn Ala Arg Phe Leu Asp Leu Leu
65   70   75   80

Trp Arg His Val Leu Ser Leu Gly Leu Leu Ala Val Ala Phe Leu Val
                85   90   95

Ser Tyr Ser Arg Val Tyr Leu Leu Tyr His Thr Trp Ser Gln Val Leu
            100   105   110

Tyr Gly Gly Ile Ala Gly Gly Leu Met Ala Ile Ala Trp Phe Ile Phe
        115   120   125

Thr Gln Glu Val Leu Thr Pro Leu Phe Pro Arg Ile Ala Ala Trp Pro
    130   135   140

Val Ser Glu Phe Phe Leu Ile Arg Asp Thr Ser Leu Ile Pro Asn Val
145   150   155   160

Leu Trp Phe Glu Tyr Thr Val Thr Arg Ala Glu Ala Arg Xaa Arg Gln
                165   170   175

Arg Lys Leu Gly Thr Lys Leu Gln
            180

<210> 861
<211> 360
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (53)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (360)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 861
Leu Pro Gln Ala Gln Gly Asp Gln Phe Pro Trp Glu Gln Ala Glu Gly
1 5 10 15

Gln Ala Pro Gly Glu Asp Gly Gln Arg Leu Pro Asp Gln Ile His Pro
20 25 30

Gly Val Pro Ala Arg Arg Arg Pro Trp Trp Arg Glu Arg Ala Arg Ala
35 40 45

Val Arg Gly Leu Xaa Glu Gly Arg Glu Pro Glu Lys Arg Arg Glu Arg
50 55 60

Lys Gln Arg Arg Glu Gly Gly Asp Gly Glu Glu Gln Asp Val Gly Asp
65 70 75 80

Ala Gly Arg Leu Leu Leu Arg Val Leu His Val Ser Glu Asn Pro Val
85 90 95

Pro Leu Thr Val Arg Val Ser Pro Glu Val Arg Asp Val Arg Pro Tyr
100 105 110

Ile Val Gly Ala Val Val Arg Gly Met Asp Leu Gln Pro Gly Asn Ala
115 120 125

Leu Lys Arg Phe Leu Thr Ser Gln Thr Lys Leu His Glu Asp Leu Cys
130 135 140

Glu Lys Arg Thr Ala Ala Thr Leu Ala Thr His Glu Leu Arg Ala Val
145 150 155 160

Lys Gly Pro Leu Leu Tyr Cys Ala Arg Pro Pro Gln Asp Leu Lys Ile
165 170 175

Val Pro Leu Gly Arg Lys Glu Ala Lys Ala Lys Glu Leu Val Arg Gln
180 185 190

Leu Gln Leu Glu Ala Glu Glu Gln Arg Lys Gln Lys Lys Arg Gln Ser
195 200 205

Val Ser Gly Leu His Arg Tyr Leu His Leu Leu Asp Gly Asn Glu Asn
210 215 220

Tyr Pro Cys Leu Val Asp Ala Asp Gly Asp Val Ile Ser Phe Pro Pro
225 230 235 240

Ile Thr Asn Ser Glu Lys Thr Lys Val Lys Lys Thr Thr Ser Asp Leu
245 250 255

Phe Leu Glu Val Thr Ser Ala Thr Ser Leu Gln Ile Cys Lys Asp Val
260 265 270

Met Asp Ala Leu Ile Leu Lys Met Ala Glu Met Lys Lys Tyr Thr Leu
275 280 285

Glu Asn Lys Glu Glu Gly Ser Leu Ser Asp Thr Glu Ala Asp Ala Val
290 295 300

Ser Gly Gln Leu Pro Asp Pro Thr Thr Asn Pro Ser Ala Gly Lys Asp
305 310 315 320

Gly Pro Ser Leu Leu Val Val Glu Gln Val Arg Val Val Asp Leu Glu
325 330 335

Gly Ser Leu Lys Val Val Tyr Pro Ser Lys Ala Asp Leu Ala Thr Ala
340 345 350

Pro Pro His Val Thr Val Val Xaa
355 360

<210> 862
<211> 518
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (476)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 862
Gln Tyr Arg Ser Glu Phe Pro Gly Arg Pro Thr Arg Pro Ala Val Thr
1 5 10 15

Ala Thr Ala Ala Ser Asp Arg Met Glu Ser Asp Ser Asp Ser Asp Lys
20 25 30

Ser Ser Asp Asn Ser Gly Leu Lys Arg Lys Thr Pro Ala Leu Lys Met
35 40 45

Ser Val Ser Lys Arg Ala Arg Lys Ala Ser Ser Asp Leu Asp Gln Ala
50 55 60

Ser Val Ser Pro Ser Glu Glu Glu Asn Ser Glu Ser Ser Ser Glu Ser
65 70 75 80

Glu Lys Thr Ser Asp Gln Asp Phe Thr Pro Glu Lys Lys Ala Ala Val
85 90 95

Arg Ala Pro Arg Arg Gly Pro Leu Gly Gly Arg Lys Lys Lys Lys Ala
100 105 110

Pro Ser Ala Ser Asp Ser Asp Ser Lys Ala Asp Ser Asp Gly Ala Lys
115 120 125

Pro Glu Pro Val Ala Met Ala Arg Ser Ala Ser Ser Ser Ser Ser Ser
130 135 140

Ser Ser Ser Ser Asp Ser Asp Val Ser Val Lys Lys Pro Pro Arg Gly
145 150 155 160

Arg Lys Pro Ala Glu Lys Pro Leu Pro Lys Pro Arg Gly Arg Lys Pro
165 170 175

Lys Pro Glu Arg Pro Pro Ser Ser Ser Ser Ser Asp Ser Asp Ser Asp
180 185 190

Glu Val Asp Arg Ile Ser Glu Trp Lys Arg Arg Asp Glu Ala Arg Arg
195 200 205

Arg Glu Leu Glu Ala Arg Arg Arg Arg Glu Gln Glu Glu Glu Leu Arg
210 215 220

Arg Leu Arg Glu Gln Glu Lys Glu Glu Lys Glu Arg Arg Arg Glu Arg
225 230 235 240

Ala Asp Arg Gly Glu Ala Glu Arg Gly Ser Gly Gly Ser Ser Gly Asp
245 250 255

Glu Leu Arg Glu Asp Asp Glu Pro Val Lys Lys Arg Gly Arg Lys Gly
260 265 270

Arg Gly Arg Gly Pro Pro Ser Ser Ser Asp Ser Glu Pro Glu Ala Glu
275 280 285

Leu Glu Arg Glu Ala Lys Lys Ser Ala Lys Lys Pro Gln Ser Ser Ser
290 295 300

Thr Glu Pro Ala Arg Lys Pro Gly Gln Lys Glu Lys Arg Val Arg Pro
305 310 315 320

Glu Glu Lys Gln Gln Ala Lys Pro Val Lys Val Glu Arg Thr Arg Lys
325 330 335

Arg Ser Glu Gly Phe Ser Met Asp Arg Lys Val Glu Lys Lys Lys Glu
340 345 350

Pro Ser Val Glu Glu Lys Leu Gln Lys Leu His Ser Glu Ile Lys Phe
355 360 365

Ala Leu Lys Val Asp Ser Pro Asp Val Lys Arg Cys Leu Asn Ala Leu
370 375 380

Glu Glu Leu Gly Thr Leu Gln Val Thr Ser Gln Ile Leu Gln Lys Asn
385 390 395 400

Thr Asp Val Val Ala Thr Leu Lys Lys Ile Arg Arg Tyr Lys Ala Asn
405 410 415

Lys Asp Val Met Glu Lys Ala Ala Glu Val Tyr Thr Arg Leu Lys Ser
420 425 430

Arg Val Leu Gly Pro Lys Ile Glu Ala Val Gln Lys Val Asn Lys Ala
435 440 445

Gly Met Glu Lys Glu Lys Ala Glu Glu Lys Leu Ala Gly Glu Glu Leu
450 455 460

Ala Gly Glu Glu Ala Pro Gln Glu Lys Gly Gly Xaa Gln Ala Gln His
465 470 475 480

Arg Ser Leu Ser Pro Ser Glu Trp Arg Gly His Ile Thr Glu Gly Gly
485 490 495

Glu Arg Arg Gly Gln Gly Ala Arg Gly Gly Ser Gly Leu Gly Gly Gly
500 505 510

Ala Lys Val Trp Leu Leu
515

<210> 863
<211> 438
<212> PRT
<213> Homo sapiens

<400> 863
Val Lys Gly Gln Gly Arg Gly Ser Arg Gly Ala Thr His Ala Leu Glu
1 5 10 15

Ile Trp Val Ile Ala Ser Gly Arg Ser Ala Ser Pro Thr Pro Gln Thr
20 25 30

Arg Ala Ala Asp Asp Pro Ala Ala Ala Met Ala Leu Leu Arg Gly Val
35 40 45

Phe Val Val Ala Ala Lys Arg Thr Pro Phe Gly Ala Tyr Gly Gly Leu
50 55 60

Leu Lys Asp Phe Thr Ala Thr Asp Leu Ser Glu Phe Ala Ala Lys Ala
65 70 75 80

Ala Leu Ser Ala Gly Lys Val Ser Pro Glu Thr Val Asp Ser Val Ile
85 90 95

Met Gly Asn Val Leu Gln Ser Ser Ser Asp Ala Ile Tyr Leu Ala Arg
100 105 110

His Val Gly Leu Arg Val Gly Ile Pro Lys Glu Thr Pro Ala Leu Thr
115 120 125

Ile Asn Arg Leu Cys Gly Ser Gly Phe Gln Ser Ile Val Asn Gly Cys
130 135 140

Gln Glu Ile Cys Val Lys Glu Ala Glu Val Val Leu Cys Gly Gly Thr
145 150 155 160

Glu Ser Met Ser Gln Ala Pro Tyr Cys Val Arg Asn Val Arg Phe Gly
165 170 175

Thr Lys Leu Gly Ser Asp Ile Lys Leu Glu Asp Ser Leu Trp Val Ser
180 185 190

Leu Thr Asp Gln His Val Gln Leu Pro Met Ala Met Thr Ala Glu Asn
195 200 205

Leu Ala Val Lys His Lys Ile Ser Arg Glu Glu Cys Asp Lys Tyr Ala
210 215 220

Leu Gln Ser Gln Gln Arg Trp Lys Ala Ala Asn Asp Ala Gly Tyr Phe
225 230 235 240

Asn Asp Glu Met Ala Pro Ile Glu Val Lys Thr Lys Lys Gly Lys Gln
245 250 255

Thr Met Gln Val Asp Glu His Ala Arg Pro Gln Thr Thr Leu Glu Gln
260 265 270

Leu Gln Lys Leu Pro Pro Val Phe Lys Lys Asp Gly Thr Val Thr Ala
275 280 285

Gly Asn Ala Ser Gly Val Ala Asp Gly Ala Gly Ala Val Ile Ile Ala
290 295 300

Ser Glu Asp Ala Val Lys Lys His Asn Phe Thr Pro Leu Ala Arg Ile
305 310 315 320

Val Gly Tyr Phe Val Ser Gly Cys Asp Pro Ser Ile Met Gly Ile Gly
325 330 335

Pro Val Pro Ala Ile Ser Gly Ala Leu Lys Lys Ala Gly Leu Ser Leu
340 345 350

Lys Asp Met Asp Leu Val Glu Val Asn Glu Ala Phe Ala Pro Gln Tyr
355 360 365

Leu Ala Val Glu Arg Ser Leu Asp Leu Asp Ile Ser Lys Thr Asn Val
370 375 380

Asn Gly Gly Ala Ile Ala Leu Gly His Pro Leu Gly Gly Ser Gly Ser
385 390 395 400

Arg Ile Thr Ala His Leu Val His Glu Leu Arg Arg Arg Gly Gly Lys
405 410 415

Tyr Ala Val Gly Ser Ala Cys Ile Gly Gly Gly Gln Gly Ile Ala Val
420 425 430

Ile Ile Gln Ser Thr Ala
435

<210> 864
<211> 214
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (138)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 864
Thr Leu Phe Asp Phe Ile Ser Leu Tyr Leu Ser Thr Asn Thr Lys Lys
1 5 10 15

Val Ile Tyr Leu Asp Asp Asp Val Ile Val Gln Gly Asp Ile Gln Glu
20 25 30

Leu Tyr Asp Thr Thr Leu Ala Leu Gly His Ala Ala Ala Phe Ser Asp
35 40 45

Asp Cys Asp Leu Pro Ser Ala Gln Asp Ile Asn Arg Leu Val Gly Leu
50 55 60

Gln Asn Thr Tyr Met Gly Tyr Leu Asp Tyr Arg Lys Lys Ala Ile Lys
65 70 75 80

Asp Leu Gly Ile Ser Pro Ser Thr Cys Ser Phe Asn Pro Gly Val Ile
85 90 95

Val Ala Asn Met Thr Glu Trp Lys His Gln Arg Ile Thr Lys Gln Leu
100 105 110

Glu Lys Trp Met Gln Lys Asn Val Glu Glu Asn Leu Tyr Ser Ser Ser
115 120 125

Leu Gly Gly Gly Val Ala Thr Ser Pro Xaa Leu Ile Val Phe His Gly
130 135 140

Lys Tyr Ser Thr Ile Asn Pro Leu Trp His Ile Arg His Leu Gly Trp
145 150 155 160

Asn Pro Asp Ala Arg Tyr Ser Glu His Phe Leu Gln Glu Ala Lys Leu
165 170 175

Leu His Trp Asn Gly Arg His Lys Pro Trp Asp Phe Pro Ser Val His
180 185 190

Asn Asp Leu Trp Glu Ser Trp Phe Val Pro Asp Pro Ala Gly Ile Phe
195 200 205

Lys Leu Asn His His Ser
210

<210> 865
<211> 165
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (134)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (139)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (140)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE
<222> (142)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 865
Gly Ser Thr His Ala Ser Asp His Ile Pro Pro Leu Lys Lys Pro Leu
1 5 10 15

Gly Ala Gln Leu Ile Thr Met Asp Trp Thr Trp Arg Phe Leu Phe Val
20 25 30

Val Ala Ala Ala Thr Gly Val Gln Ser Gln Val Gln Leu Val Gln Ser
35 40 45

Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Lys Val Ser Cys Lys
50 55 60

Ala Ser Gly Gly Thr Phe Ser Ser Tyr Ala Ile Ser Trp Val Arg Gln
65 70 75 80

Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Gly Ile Ile Pro Ile Phe
85 90 95

Gly Thr Ala Asn Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Ile Thr
100 105 110

Ala Asp Glu Ser Thr Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg
115 120 125

Ser Glu Asp Thr Ala Xaa Tyr Tyr Cys Ala Xaa Xaa Pro Xaa Ala Gly
130 135 140

Tyr Leu Ser Gln Leu Leu Pro Arg Tyr Gly Arg Leu Gly Pro Arg Asp
145 150 155 160

His Gly His Arg Leu
165

<210> 866
<211> 87
<212> PRT
<213> Homo sapiens

<400> 866
Lys Gln His Tyr Ile Ala Val Leu Tyr Tyr Ser Val Tyr Asp Val Cys
1 5 10 15

Glu Asn Ala Arg Phe Lys Met Met Tyr Leu Phe Leu Val Lys Asn Lys
20 25 30

Lys Phe Tyr Ala Ile Leu Leu Ile Lys Cys Lys Cys Asp Leu Val Gln
35 40 45

Phe Thr Lys Ile Thr Asp Ile Phe His Tyr Ile Glu Thr Val Thr Val
50 55 60

Arg Ile Gly His Lys His Gln Leu Leu Pro Ala Ser Gly Lys Leu Leu
65 70 75 80

Asn Arg Thr Ala Val Met Ser
85

<210> 867
<211> 101
<212> PRT
<213> Homo sapiens

<400> 867
Phe Phe Gln Lys Ile Met Leu Ser Phe His Glu Glu Gln Glu Val Leu
1 5 10 15

Pro Glu Thr Phe Leu Ala Asn Phe Pro Ser Leu Ile Lys Met Asp Ile
20 25 30

His Lys Lys Val Thr Asp Pro Ser Val Ala Lys Ser Met Met Ala Cys
35 40 45

Leu Leu Ser Ser Leu Lys Ala Asn Gly Ser Arg Gly Ala Phe Cys Glu
50 55 60

Val Arg Pro Asp Asp Lys Arg Ile Leu Glu Phe Tyr Ser Lys Leu Gly
65 70 75 80

Cys Phe Glu Ile Ala Lys Met Glu Gly Phe Pro Lys Asp Val Val Ile
85 90 95

Leu Gly Arg Ser Leu
100

<210> 868
<211> 82
<212> PRT
<213> Homo sapiens

<400> 868
Leu Leu Pro Gly Ser Ala Leu Pro Gly Ala Cys Pro Arg Arg Trp Tyr

1 5 10 15

Gly Ser Tyr Leu Val Trp Lys Glu Leu Gly Gly Phe Thr Glu Lys Ala
20 25 30

Val Val Pro Leu Gly Leu Tyr Thr Gly Gln Leu Ala Leu Asn Trp Ala
35 40 45

Trp Pro Pro Ile Phe Phe Gly Ala Arg Gln Met Gly Trp Ala Leu Val
50 55 60

Asp Leu Leu Leu Val Ser Gly Ala Ala Ala Ala Leu Pro Trp Pro Gly
65 70 75 80

Thr Arg

<210> 869
<211> 562
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (18)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (23)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 869
Leu Lys Pro Glu Pro Asp Asp Leu Ile Asp Glu Asp Leu Asn Phe Val
1 5 10 15

Gln Xaa Asn Pro Leu Ser Xaa Lys Lys Pro Thr Val Thr Leu Thr Tyr
20 25 30

Gly Ser Ser Arg Pro Ser Ile Glu Ile Tyr Arg Pro Pro Ala Ser Arg
35 40 45

Asn Ala Asp Ser Gly Val His Leu Asn Arg Leu Gln Phe Gln Gln Gln
50 55 60

Gln Asn Ser Ile His Ala Ala Lys Gln Leu Asp Met Gln Ser Ser Trp
65 70 75 80

Val Tyr Glu Thr Gly Arg Leu Cys Glu Pro Glu Val Leu Asn Ser Leu

85 90 95

Glu Glu Thr Tyr Ser Pro Phe Phe Arg Asn Asn Ser Glu Lys Met Ser
100 105 110

Met Glu Asp Glu Asn Phe Arg Lys Arg Lys Leu Pro Val Val Ser Ser
115 120 125

Val Val Lys Val Lys Lys Phe Asn His Asp Gly Glu Glu Glu Glu Glu
130 135 140

Asp Asp Asp Tyr Gly Ser Arg Thr Gly Ser Ile Ser Ser Ser Val Ser
145 150 155 160

Val Pro Ala Lys Pro Glu Arg Arg Pro Ser Leu Pro Pro Ser Lys Gln
165 170 175

Ala Asn Lys Asn Leu Ile Leu Lys Ala Ile Ser Glu Ala Gln Glu Ser
180 185 190

Val Thr Lys Thr Thr Asn Tyr Ser Thr Val Pro Gln Lys Gln Thr Leu
195 200 205

Pro Val Ala Pro Arg Thr Arg Thr Ser Gln Glu Glu Leu Leu Ala Glu
210 215 220

Val Val Gln Gly Gln Ser Arg Thr Pro Arg Ile Ser Pro Pro Ile Lys
225 230 235 240

Glu Glu Glu Thr Lys Gly Asp Ser Val Glu Lys Asn Gln Gly Thr Gln
245 250 255

Gln Arg Gln Leu Leu Ser Arg Leu Gln Ile Asp Pro Val Met Ala Glu
260 265 270

Thr Leu Gln Met Ser Gln Asp Tyr Tyr Asp Met Glu Ser Met Val His
275 280 285

Ala Asp Thr Arg Ser Phe Ile Leu Lys Lys Pro Lys Leu Ser Glu Glu
290 295 300

Val Val Val Ala Pro Asn Gln Glu Ser Gly Met Lys Thr Ala Asp Ser
305 310 315 320

Leu Arg Val Leu Ser Gly His Leu Met Gln Thr Arg Asp Leu Val Gln
325 330 335

Pro Asp Lys Pro Ala Ser Pro Lys Phe Ile Val Thr Leu Asp Gly Val
340 345 350

Pro Ser Pro Pro Gly Tyr Met Ser Asp Gln Glu Glu Asp Met Cys Phe

355 360 365

Glu Gly Met Lys Pro Val Asn Gln Thr Ala Ala Ser Asn Lys Gly Leu
370 375 380

Arg Gly Leu Leu His Pro Gln Gln Leu His Leu Leu Ser Arg Gln Leu
385 390 395 400

Glu Asp Pro Asn Gly Ser Phe Ser Asn Ala Glu Met Ser Glu Leu Ser
405 410 415

Val Ala Gln Lys Pro Glu Lys Leu Leu Glu Arg Cys Lys Tyr Trp Pro
420 425 430

Ala Cys Lys Asn Gly Asp Glu Cys Ala Tyr His His Pro Ile Ser Pro
435 440 445

Cys Lys Ala Phe Pro Asn Cys Lys Phe Ala Glu Lys Cys Leu Phe Val
450 455 460

His Pro Asn Cys Lys Tyr Asp Ala Lys Cys Thr Lys Pro Asp Cys Pro
465 470 475 480

Phe Thr His Val Ser Arg Arg Ile Pro Val Leu Ser Pro Lys Pro Val
485 490 495

Ala Pro Pro Ala Pro Pro Ser Ser Ser Gln Leu Cys Arg Tyr Phe Pro
500 505 510

Ala Cys Lys Lys Met Glu Cys Pro Phe Tyr His Pro Lys His Cys Arg
515 520 525

Phe Asn Thr Gln Cys Thr Arg Pro Asp Cys Thr Phe Tyr His Pro Thr
530 535 540

Ile Asn Val Pro Pro Arg His Ala Leu Lys Trp Ile Arg Pro Gln Thr
545 550 555 560

Ser Glu

<210> 870
<211> 191
<212> PRT
<213> Homo sapiens

<400> 870
Pro Asn Gly Ser Ser Asn Val Cys Val Ser Leu Cys Val Phe Val Cys
1 5 10 15

Val Cys Ala Leu Lys Thr Ser Asn Ser Leu Glu Ala Trp Gly Gly Ile
20 25 30

Pro Ala Leu Pro Leu Ala Cys Leu Met His His Gln Met Thr Arg Thr
35 40 45

Thr Leu Met Thr Lys Gln His Glu Leu Gly Gly Leu Leu Ala Leu Val
50 55 60

Gln Asn Cys Gln Ser Glu Met Asn Ile Lys Asp Ser Arg Ala Val Gly
65 70 75 80

Leu Ser Val Lys Arg Leu Cys Ile Ser Phe Val Asp Glu Phe Cys Glu
85 90 95

Arg Thr Glu Arg Pro Leu Tyr Leu Ala Gln Gly Leu Phe Met Lys Arg
100 105 110

Glu Thr Tyr Trp Glu Val Gln Asp Ser Gly Ile Ser Pro Leu Leu Leu
115 120 125

Leu Leu Ser Thr Ala Leu Asp Cys Ser Pro Glu Ala Glu Thr Arg Gln
130 135 140

Ser Pro Gly Gly Arg Lys Met Leu Gln Glu Pro Thr Leu Ser Met Ser
145 150 155 160

Leu Gln Ile Leu Thr Gly Phe Leu Trp Val Gln Leu Trp Asn Trp Glu
165 170 175

Thr Phe Leu Arg Ile Arg Thr His Ser Thr Asp Ala Ser Cys Pro
180 185 190

<210> 871
<211> 75
<212> PRT
<213> Homo sapiens

<400> 871
Leu Phe Lys Val Ser Asn Val His Pro Gly Leu Gly Ile Thr Asn Val
1 5 10 15

Gly Val Lys Met Pro Thr Lys Gly Phe Ser Ala Leu Glu Val Leu Arg
20 25 30

Ser Pro Ile Cys Ile Lys Ala Asp Pro Phe Cys Lys Asp Leu Ser Phe
35 40 45

```
Arg Thr Phe Ser Val Leu Leu Val Arg Thr Leu Glu Val Ile Leu Ile
     50                  55                  60

Ile Ser Thr Asp Ser Leu Thr Ala Glu Ala Thr
 65                  70                  75



<210> 872
<211> 203
<212> PRT
<213> Homo sapiens

<400> 872
Asn Ser Ala Arg Gly Asp Gln Glu Ser Thr Cys Ala Glu Val Leu Val
  1               5                  10                  15

Ile Trp Ser Leu Phe Pro Ser Gly Tyr Gln Leu Pro Ser Ala Ala Gln
             20                  25                  30

Ala Val Val Pro Glu Ala Arg Gly Arg Ser Gln Thr Cys Gly Asn Phe
         35                  40                  45

Ala Val Tyr Leu Gln Gly Cys Cys Phe Gln Gln Asp Pro Lys Leu Glu
     50                  55                  60

Lys Glu Glu Glu Glu Thr Asp Pro Ile Ser Ala Arg Ser His Cys Ile
 65                  70                  75                  80

Gln Arg Arg Ile Ser Lys Lys Glu Lys Lys Glu Gly Arg Glu Val Asp
                 85                  90                  95

Arg Tyr Lys Met Lys Ser Cys Gln Lys Met Glu Gly Lys Pro Glu Asn
            100                 105                 110

Glu Ser Glu Pro Lys His Glu Glu Glu Pro Lys Pro Glu Glu Lys Pro
        115                 120                 125

Glu Glu Glu Glu Lys Leu Glu Glu Glu Ala Lys Ala Lys Gly Thr Phe
    130                 135                 140

Arg Glu Arg Leu Ile Gln Ser Leu Gln Glu Phe Lys Glu Asp Ile His
145                 150                 155                 160

Asn Arg His Leu Ser Asn Glu Asp Met Phe Arg Glu Val Asp Glu Ile
                165                 170                 175

Asp Glu Ile Arg Arg Val Arg Asn Lys Leu Ile Val Met Arg Trp Lys
            180                 185                 190

Val Asn Arg Asn His Pro Tyr Pro Tyr Leu Met
```

195 200

<210> 873
<211> 66
<212> PRT
<213> Homo sapiens

<400> 873
Ser Leu Gln Pro Leu Pro Pro Arg Phe Lys Gln Phe Leu Cys Leu Ser
1 5 10 15

Leu Pro Ser Asn Trp Asp Tyr Arg Cys Thr Leu Pro His Leu Ala Asp
20 25 30

Phe Phe Tyr Val Leu Val Glu Thr Gly Phe Gln Pro Cys Cys Pro Gly
35 40 45

Trp Ser Gln Thr Pro Glu Leu Arg Gln Ser Thr Arg Leu Gly Leu Pro
50 55 60

Lys Cys
65

<210> 874
<211> 231
<212> PRT
<213> Homo sapiens

<400> 874
Val Lys Leu Lys Glu Glu Phe Ser Leu Ser Gly Arg Ile Ile Asp Cys
1 5 10 15

Ala Phe Thr Val Thr Phe Asn Pro Lys Tyr Asp Thr Leu Leu Lys Ala
20 25 30

Val Lys Asp Ala Thr Asn Thr Gly Ile Lys Cys Ala Gly Ile Asp Val
35 40 45

Arg Leu Cys Asp Val Gly Glu Ala Ile Gln Glu Val Met Glu Ser Tyr
50 55 60

Glu Val Glu Ile Asp Gly Lys Thr Tyr Gln Val Lys Pro Ile Arg Asn
65 70 75 80

Leu Asn Gly His Ser Ile Gly Gln Tyr Arg Ile His Ala Gly Lys Thr
85 90 95

Val Pro Ile Val Lys Gly Gly Glu Ala Thr Arg Met Glu Glu Gly Glu
100 105 110

Val Tyr Ala Ile Glu Thr Phe Gly Ser Thr Gly Lys Gly Val Val His
115 120 125

Asp Asp Met Glu Cys Ser His Tyr Met Lys Asn Phe Asp Val Gly His
130 135 140

Val Pro Ile Arg Leu Pro Arg Thr Lys His Leu Leu Asn Val Ile Asn
145 150 155 160

Glu Asn Phe Gly Thr Leu Ala Phe Cys Arg Arg Trp Leu Asp Arg Leu
165 170 175

Gly Glu Ser Lys Tyr Leu Met Ala Leu Lys Asn Leu Cys Asp Leu Gly
180 185 190

Ile Val Asp Pro Tyr Pro Pro Leu Cys Asp Ile Lys Gly Ser Tyr Thr
195 200 205

Ala Gln Phe Glu His Thr Ile Leu Leu Arg Pro Thr Cys Lys Glu Val
210 215 220

Val Ser Arg Gly Asp Asp Tyr
225 230

<210> 875
<211> 88
<212> PRT
<213> Homo sapiens

<400> 875
Cys Leu Tyr Tyr Gln Val Leu Ser Thr Ile Leu Ile Thr Asn Cys Asp
1 5 10 15

Lys Phe Phe Leu Phe Phe Phe Pro Leu Pro His Tyr Phe Leu Met Asn
20 25 30

Lys Pro Lys Ile His Gly Glu Gln Leu Gln Cys Trp Leu Ile Tyr Leu
35 40 45

Leu Cys Thr Gly Asn Leu Lys Arg Thr Val Asp Ser Phe Arg Ser Val
50 55 60

Thr Gly Ala Val Ile Ile Ala Ile His Leu Leu Val Val Leu His Leu
65 70 75 80

Phe His Ala Ser Phe Leu Asn Val

85

<210> 876
<211> 330
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (97)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (106)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (124)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (138)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (174)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (178)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (194)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 876
Asn Ser Ala Arg Ala Val Gln Gly Leu Leu Glu Val Ala Lys Asp Ser
1 5 10 15

Ile Pro Arg Ser His Trp Lys Lys Thr Pro Val Val Leu Lys Ala Thr
20 25 30

Ala Gly Leu Arg Leu Leu Pro Glu His Lys Ala Lys Ala Leu Leu Phe
35 40 45

Glu Val Lys Glu Ile Phe Arg Lys Ser Pro Phe Leu Val Pro Lys Gly
50 55 60

Ser Val Ser Ile Met Asp Gly Ser Asp Glu Gly Ile Leu Ala Trp Val
65 70 75 80

Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly His Arg Gln Glu Thr
85 90 95

Xaa Gly Thr Leu Asp Leu Gly Gly Ala Xaa Thr Gln Ile Thr Phe Leu
100 105 110

Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Xaa Gly Tyr Leu Thr
115 120 125

Ser Phe Glu Met Phe Asn Ser Thr Tyr Xaa Leu Tyr Thr His Ser Tyr
130 135 140

Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr Leu Gly Ala Leu
145 150 155 160

Glu Thr Glu Gly Thr Asp Gly His Thr Phe Arg Ser Ala Xaa Leu Pro
165 170 175

Arg Xaa Leu Glu Ala Glu Trp Ile Phe Gly Gly Val Lys Tyr Gln Tyr
180 185 190

Gly Xaa Asn Gln Glu Gly Glu Val Gly Phe Glu Pro Cys Tyr Ala Glu
195 200 205

Val Leu Arg Val Val Arg Gly Lys Leu His Gln Pro Glu Glu Val Gln
210 215 220

Arg Gly Ser Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp Arg Ala Val Asp
225 230 235 240

Thr Asp Met Ile Asp Tyr Glu Lys Gly Gly Ile Leu Lys Val Glu Asp
245 250 255

Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu Glu Asn Phe Thr
260 265 270

Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Ser Tyr Ile Thr Ala Leu
275 280 285

Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val Leu Gln Leu Thr
290 295 300

Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu Gly Ala Thr Phe
305 310 315 320

His Leu Leu Gln Ser Leu Gly Ile Ser His
325 330

<210> 877
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (100)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 877
Asp Leu His Ser Gln Trp Gly Thr Trp Pro Pro Ile Leu Gly Asp Leu
1 5 10 15

Arg Lys Arg Thr Ser Pro Trp Gly Glu Gly Trp Val Gly Pro Glu Gly
20 25 30

Pro Val Pro Ser Ser Val Leu Arg Gly Arg Ala Thr Cys Ser Asn Gly
35 40 45

Ile Cys Ile Leu Ala Pro Leu His Leu Leu Ser Pro Ala Glu Ser Phe
50 55 60

Pro Ser Lys Pro Lys Ser Cys His Cys Phe Phe Leu Pro Gly Lys Asn
65 70 75 80

Ala Trp Thr Leu Pro Gly Asp Arg Leu Lys Pro Glu Gln Cys His Thr
85 90 95

Leu Ala Leu Xaa Pro Cys
100

<210> 878
<211> 135
<212> PRT
<213> Homo sapiens

<400> 878
Thr Leu Glu Ser Lys Ala Asp Thr Glu Ala Ser Arg Leu Gln Glu Tyr
1 5 10 15

Arg Ser Gln Val Leu Ser Val Gly Leu Gly Cys Val Ser Trp Gly Lys
20 25 30

Lys Asn Cys Glu Lys Pro Gln Ser Ser Ile Phe Thr Val Thr His Gly
35 40 45

Arg Ser Leu Asn Cys Leu Val Asn Lys Asn Glu Ser Leu Ser Gln Arg
50 55 60

Lys Pro Arg Gln Tyr Pro Ser Ser Thr Thr Cys Glu Asn Pro Asp Val
65 70 75 80

Pro Gln Gln Arg Lys Thr Leu Gln Ala Gly Lys Met Arg Arg Phe Phe
85 90 95

Phe Phe Val Ser Met Met Ile Phe Ala Ala Thr Trp Leu Trp Arg Ala
100 105 110

Ala Asp Thr Pro Ser Tyr Ser Arg Gly Cys Phe Leu Glu Ala Asp Ser
115 120 125

Val Cys Ser Leu Val Glu Leu
130 135

<210> 879
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (168)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 879
Val Ile Cys Met Trp Gln Gly Cys Ala Val Glu Arg Pro Val Gly Arg
1 5 10 15

Met Thr Ser Gln Thr Pro Leu Pro Gln Ser Pro Arg Pro Arg Arg Pro
20 25 30

Thr Met Ser Thr Val Val Glu Leu Asn Val Gly Gly Glu Phe His Thr
35 40 45

Thr Thr Leu Gly Thr Leu Arg Lys Phe Pro Gly Ser Lys Leu Ala Glu
50 55 60

Met Phe Ser Ser Leu Ala Lys Ala Ser Thr Asp Ala Glu Gly Arg Phe
65 70 75 80

Phe Ile Asp Arg Pro Ser Thr Tyr Phe Arg Pro Ile Leu Asp Tyr Leu
85 90 95

Arg Thr Gly Gln Val Pro Thr Gln His Ile Pro Glu Val Tyr Arg Glu
100 105 110

Ala Gln Phe Tyr Glu Ile Lys Pro Leu Val Lys Leu Leu Glu Asp Met
115 120 125

Pro Gln Ile Phe Gly Glu Gln Val Ser Arg Lys Gln Phe Leu Leu Gln
130 135 140

Cys Arg Ala Thr Ala Arg Thr Trp Glu Leu Met Val Arg Leu Ala Arg
145 150 155 160

Ala Glu Ala Ile Thr Ala Arg Xaa Ser Arg Cys Leu Cys Ala Trp
165 170 175

<210> 880
<211> 397
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (311)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 880
Trp Glu Tyr Asp Met Ala Arg Glu Leu Arg Ala Leu Leu Leu Trp Gly
1 5 10 15

Arg Arg Leu Arg Pro Leu Leu Arg Ala Pro Ala Leu Ala Ala Val Pro
20 25 30

Gly Gly Lys Pro Ile Leu Cys Pro Arg Arg Thr Thr Ala Gln Leu Gly
35 40 45

Pro Arg Arg Asn Pro Ala Trp Ser Leu Gln Ala Gly Arg Leu Phe Ser
50 55 60

Thr Gln Thr Ala Glu Asp Lys Glu Glu Pro Leu His Ser Ile Ile Ser
65 70 75 80

Ser Thr Glu Ser Val Gln Gly Ser Thr Ser Lys His Glu Phe Gln Ala
85 90 95

Glu Thr Lys Lys Leu Leu Asp Ile Val Ala Arg Ser Leu Tyr Ser Glu

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                100                 105                 110

Lys Glu Val Phe Ile Arg Glu Leu Ile Ser Asn Ala Ser Asp Ala Leu
            115                 120                 125

Glu Lys Leu Arg His Lys Leu Val Ser Asp Gly Gln Ala Leu Pro Glu
    130                 135                 140

Met Glu Ile His Leu Gln Thr Asn Ala Glu Lys Gly Thr Ile Thr Ile
145                 150                 155                 160

Gln Asp Thr Gly Ile Gly Met Thr Gln Glu Glu Leu Val Ser Asn Leu
                165                 170                 175

Gly Thr Ile Ala Arg Ser Gly Ser Lys Ala Phe Leu Asp Ala Leu Gln
            180                 185                 190

Asn Gln Ala Glu Ala Ser Ser Lys Ile Ile Gly Gln Phe Gly Val Gly
        195                 200                 205

Phe Tyr Ser Ala Phe Met Val Ala Asp Arg Val Glu Val Tyr Ser Arg
    210                 215                 220

Ser Ala Ala Pro Gly Ser Leu Gly Tyr Gln Trp Leu Ser Asp Gly Ser
225                 230                 235                 240

Gly Val Phe Glu Ile Ala Glu Ala Ser Gly Val Arg Thr Gly Thr Lys
                245                 250                 255

Ile Ile Ile His Leu Lys Ser Asp Cys Lys Glu Phe Ser Ser Glu Ala
            260                 265                 270

Arg Val Arg Asp Val Val Thr Lys Tyr Ser Asn Phe Val Ser Phe Pro
        275                 280                 285

Leu Tyr Leu Asn Gly Arg Arg Met Asn Thr Leu Gln Ala Ile Trp Met
    290                 295                 300

Met Asp Pro Lys Asp Val Xaa Glu Trp Gln His Glu Glu Phe Tyr Arg
305                 310                 315                 320

Tyr Val Ala Gln Ala His Asp Lys Pro Arg Tyr Thr Leu His Tyr Lys
                325                 330                 335

Thr Asp Ala Pro Leu Asn Ile Arg Ser Ile Phe Tyr Val Pro Asp Met
            340                 345                 350

Lys Pro Ser Met Phe Asp Val Ser Arg Glu Leu Gly Ser Ser Val Cys
        355                 360                 365

Thr Val Gln Pro Gln Ser Pro His Pro Asp Gln Gly His Gly His Pro
```

370 375 380

Ala Gln Val Ala Ala Leu His Pro Arg Cys Gly Gly Gln
385 390 395

<210> 881
<211> 187
<212> PRT
<213> Homo sapiens

<400> 881
Ile Ser Leu Phe Pro Pro Pro Gly Pro Gln Leu Cys Leu Pro Asp Lys
1 5 10 15

Glu Gly Gln His Ser Lys Ser Arg Ser Ala Ile Tyr Leu Pro Val Arg
20 25 30

Ser Thr Asn Ser Ser Val Arg Lys Met Ala Gly Asn Ser Ile Leu Leu
35 40 45

Ala Ala Val Ser Ile Leu Ser Ala Cys Gln Gln Ser Tyr Phe Ala Leu
50 55 60

Gln Val Gly Lys Ala Arg Leu Lys Tyr Lys Val Thr Pro Pro Ala Val
65 70 75 80

Thr Gly Ser Pro Glu Phe Glu Arg Val Phe Arg Ala Gln Gln Asn Cys
85 90 95

Val Glu Phe Tyr Pro Ile Phe Ile Ile Thr Leu Trp Met Ala Gly Trp
100 105 110

Tyr Phe Asn Gln Val Phe Ala Thr Cys Leu Gly Leu Val Tyr Ile Tyr
115 120 125

Gly Arg His Leu Tyr Phe Trp Gly Tyr Ser Glu Ala Ala Lys Lys Arg
130 135 140

Ile Thr Gly Phe Arg Leu Ser Leu Gly Ile Leu Ala Leu Leu Thr Leu
145 150 155 160

Leu Gly Ala Leu Gly Ile Ala Asn Ser Phe Leu Asp Glu Tyr Leu Asp
165 170 175

Leu Asn Ile Ala Lys Lys Leu Arg Arg Gln Phe
180 185

<210> 882
<211> 128
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (96)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (112)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 882
Thr Thr Asn Ile Gln Gln Gly His Phe Leu Lys Arg Glu Ser Ala Phe
1 5 10 15

Asn Glu Met Thr Met Val Asp Thr Glu Met Pro Phe Trp Pro Thr Asn
20 25 30

Phe Gly Ile Ser Ser Val Asp Leu Ser Val Met Glu Asp His Ser His
35 40 45

Ser Phe Asp Ile Lys Pro Phe Thr Thr Val Asp Phe Ser Ser Ile Ser
50 55 60

Thr Pro His Tyr Glu Asp Ile Pro Phe Thr Arg Thr Asp Pro Val Val
65 70 75 80

Ala Asp Tyr Lys Tyr Asp Leu Lys Leu Gln Glu Tyr Gln Ser Ala Xaa
85 90 95

Lys Val Glu Pro Ala Ser Pro Pro Tyr Tyr Ser Glu Lys Thr Gln Xaa
100 105 110

Tyr Asn Lys Pro His Glu Glu Pro Ser Asn Ser Leu Met Ala Ile Glu
115 120 125

<210> 883
<211> 81
<212> PRT
<213> Homo sapiens

<220>

<221> SITE
<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 883
Ser Asn Glu Phe Ile Thr Asn Phe Xaa Gln Ala Leu Ser Gly Tyr Cys
1 5 10 15

Gly Phe Met Ala Ala Xaa Leu Tyr Ala Arg Ser Ile Phe Gly Glu Asp
20 25 30

Ala Leu Ala Asn Val Ser Ile Glu Lys Pro Ile His Gln Gly Pro Asp
35 40 45

Ala Ala Val Thr Gly His Ile Arg Ile Arg Ala Lys Ser Gln Gly Met
50 55 60

Ala Leu Ser Leu Gly Asp Lys Ile Asn Leu Ser Gln Lys Lys Thr Ser
65 70 75 80

Ile

<210> 884
<211> 293
<212> PRT
<213> Homo sapiens

<400> 884
Gly Ala Asn Asn Gly Gly Ser Lys Leu Thr Gln Thr Pro Lys Leu Gln
1 5 10 15

Glu Leu Met Lys Val Leu Ile Asp Trp Ile Asn Asp Val Leu Val Gly
20 25 30

Glu Arg Ile Ile Val Lys Asp Leu Ala Glu Asp Leu Tyr Asp Gly Gln
35 40 45

Val Leu Gln Lys Leu Phe Glu Lys Leu Glu Ser Glu Lys Leu Asn Val
50 55 60

Ala Glu Val Thr Gln Ser Glu Ile Ala Gln Lys Gln Lys Leu Gln Thr
65 70 75 80

Val Leu Glu Lys Ile Asn Glu Thr Leu Lys Leu Pro Pro Arg Ser Ile
85 90 95

Lys Trp Asn Val Asp Ser Val His Ala Lys Ser Leu Val Ala Ile Leu
100 105 110

His Leu Leu Val Ala Leu Ser Gln Tyr Phe Arg Ala Pro Ile Arg Leu
115 120 125

Pro Asp His Val Ser Ile Gln Val Val Val Val Gln Lys Arg Glu Gly
130 135 140

Ile Leu Gln Ser Arg Gln Ile Gln Glu Glu Ile Thr Gly Asn Thr Glu
145 150 155 160

Ala Leu Ser Gly Arg His Glu Arg Asp Ala Phe Asp Thr Leu Phe Asp
165 170 175

His Ala Pro Asp Lys Leu Asn Val Val Lys Lys Thr Leu Ile Thr Phe
180 185 190

Val Asn Lys His Leu Asn Lys Leu Asn Leu Glu Val Thr Glu Leu Glu
195 200 205

Thr Gln Phe Ala Asp Gly Val Tyr Leu Val Leu Leu Met Gly Leu Leu
210 215 220

Glu Gly Tyr Phe Val Pro Leu His Ser Phe Phe Leu Thr Pro Asp Ser
225 230 235 240

Phe Glu Gln Lys Val Leu Asn Val Ser Phe Ala Phe Glu Leu Met Gln
245 250 255

Asp Gly Gly Leu Glu Lys Pro Lys Pro Arg Pro Glu Asp Ile Val Asn
260 265 270

Cys Asp Leu Lys Ser Thr Leu Arg Val Leu Tyr Asn Leu Phe Thr Lys
275 280 285

Tyr Arg Asn Val Glu
290

<210> 885
<211> 116
<212> PRT
<213> Homo sapiens

<400> 885
Tyr Val Tyr Leu Ile Ile Leu Pro Leu Ala Lys Cys Tyr Val Cys Lys

1 5 10 15

Met Trp His Leu Leu Val Phe Ile Val Cys Val Phe Phe Val Tyr Tyr
20 25 30

Thr Leu Gly Asn Phe Val Leu Pro Lys Lys Lys Lys Lys Gly Ser Val
35 40 45

Met Ser Asp Thr Gln Glu Lys Gln Ile Ser Val Val Ser Leu Lys Tyr
50 55 60

Asn Phe Lys Gly His Tyr Gln Gln Gln Gly Phe Phe Tyr Thr Leu Lys
65 70 75 80

Thr Leu Cys Tyr Ile Ser Leu Pro Phe Ser Tyr Phe Gly Val Leu Leu
85 90 95

Leu Leu Tyr Asn Gly Ile Asn Gly Asn Val Ile Gln Pro Leu Asn Cys
100 105 110

His Tyr Tyr Ile
115

<210> 886
<211> 80
<212> PRT
<213> Homo sapiens

<400> 886
Tyr Glu His Leu Phe Tyr Lys Phe Tyr Lys Ser Met Leu Asn Leu Arg
1 5 10 15

Lys Thr Lys Gln Val Cys Leu Tyr Ser Gln Lys Leu Cys His Leu Ser
20 25 30

Gln Tyr Asp Phe Asn Met Cys Ile Asn Gly Lys Gln Gly Lys Val Phe
35 40 45

Ser Asn Ile Thr Val Leu Leu Gly Asn Leu Cys Arg Val His Ile Asn
50 55 60

Ala Ser Tyr Ile Thr Leu Ile Cys Phe Leu Cys Trp Pro Tyr Arg Gly
65 70 75 80

<210> 887
<211> 416
<212> PRT
<213> Homo sapiens

<400> 887
Thr Phe Pro Pro Glu Phe Val Ile Pro Leu Ser Glu Val Thr Cys Glu
1   5   10   15

Thr Gly Glu Thr Val Val Leu Arg Cys Arg Val Cys Gly Arg Pro Lys
            20   25   30

Ala Ser Ile Thr Trp Lys Gly Pro Glu His Asn Thr Leu Asn Asn Asp
        35   40   45

Gly His Tyr Ser Ile Ser Tyr Ser Asp Leu Gly Glu Ala Thr Leu Lys
    50   55   60

Ile Val Gly Val Thr Thr Glu Asp Asp Gly Ile Tyr Thr Cys Ile Ala
65   70   75   80

Val Asn Asp Met Gly Ser Ala Ser Ser Ser Ala Ser Leu Arg Val Leu
                85   90   95

Gly Pro Gly Met Asp Gly Ile Met Val Thr Trp Lys Asp Asn Phe Asp
            100   105   110

Ser Phe Tyr Ser Glu Val Ala Glu Leu Gly Arg Gly Arg Phe Ser Val
        115   120   125

Val Lys Lys Cys Asp Gln Lys Gly Thr Lys Arg Ala Val Ala Thr Lys
    130   135   140

Phe Val Asn Lys Lys Leu Met Lys Arg Asp Gln Val Thr His Glu Leu
145   150   155   160

Gly Ile Leu Gln Ser Leu Gln His Pro Leu Leu Val Gly Leu Leu Asp
                165   170   175

Thr Phe Glu Thr Pro Thr Ser Tyr Ile Leu Val Leu Glu Met Ala Asp
            180   185   190

Gln Gly Arg Leu Leu Asp Cys Val Val Arg Trp Gly Ser Leu Thr Glu
        195   200   205

Gly Lys Ile Arg Ala His Leu Gly Glu Val Leu Glu Ala Val Arg Tyr
    210   215   220

Leu His Asn Cys Arg Ile Ala His Leu Asp Leu Lys Pro Glu Asn Ile
225   230   235   240

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Leu Val Asp Glu Ser Leu Ala Lys Pro Thr Ile Lys Leu Ala Asp Phe
                245                 250                 255

Gly Asp Ala Val Gln Leu Asn Thr Thr Tyr Tyr Ile His Gln Leu Leu
            260                 265                 270

Gly Asn Pro Glu Phe Ala Ala Pro Glu Ile Ile Leu Gly Asn Pro Val
        275                 280                 285

Ser Leu Thr Ser Asp Thr Trp Ser Val Gly Val Leu Thr Tyr Val Leu
    290                 295                 300

Leu Ser Gly Val Ser Pro Phe Leu Asp Asp Ser Val Glu Glu Thr Cys
305                 310                 315                 320

Leu Asn Ile Cys Arg Leu Asp Phe Ser Phe Pro Asp Asp Tyr Phe Lys
                325                 330                 335

Gly Val Ser Gln Lys Ala Lys Glu Phe Val Cys Phe Ser Cys Arg Arg
            340                 345                 350

Thr Pro Pro Ser Val Pro Arg Leu Arg Trp Pro Ser Arg Ser Ser Gly
        355                 360                 365

Cys Arg Pro Ala Thr Ala Glu Ser Thr Gly Val Leu Asp Thr Ser Arg
    370                 375                 380

Leu Thr Ser Phe Ile Glu Arg Arg Lys His Gln Asn Asp Val Arg Pro
385                 390                 395                 400

Ile Arg Ser Ile Lys Asn Phe Leu Gln Ser Arg Leu Leu Pro Arg Val
                405                 410                 415
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<210> 888
<211> 368
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (196)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 888
Arg Gln Arg Arg Lys Gly Gly Gln Glu Arg Gly Arg Arg Gly Lys Met
1               5                   10                  15
```

Ala Ala Thr Lys Arg Lys Arg Arg Gly Gly Phe Ala Val Gln Ala Lys
20 25 30

Lys Pro Lys Arg Asn Glu Ile Asp Ala Glu Pro Pro Ala Lys Arg His
35 40 45

Ala Thr Ala Glu Glu Val Glu Glu Glu Glu Arg Asp Arg Ile Pro Gly
50 55 60

Pro Val Cys Lys Gly Lys Trp Lys Asn Lys Glu Arg Ile Leu Ile Phe
65 70 75 80

Ser Ser Arg Gly Ile Asn Phe Arg Thr Arg His Leu Met Gln Asp Leu
85 90 95

Arg Met Leu Met Pro His Ser Lys Ala Asp Thr Lys Met Asp Arg Lys
100 105 110

Asp Lys Leu Phe Val Ile Asn Glu Val Cys Glu Met Lys Asn Cys Asn
115 120 125

Lys Cys Ile Tyr Phe Glu Ala Lys Lys Lys Gln Asp Leu Tyr Met Trp
130 135 140

Leu Ser Asn Ser Pro His Gly Pro Ser Ala Lys Phe Leu Val Gln Asn
145 150 155 160

Ile His Thr Leu Ala Glu Leu Lys Met Thr Gly Asn Cys Leu Lys Gly
165 170 175

Ser Arg Pro Leu Leu Ser Phe Asp Pro Ala Phe Asp Glu Leu Pro His
180 185 190

Tyr Ala Leu Xaa Lys Glu Leu Leu Ile Gln Ile Phe Ser Thr Pro Arg
195 200 205

Tyr His Pro Lys Ser Gln Pro Phe Val Asp His Val Phe Thr Phe Thr
210 215 220

Ile Leu Asp Asn Arg Ile Trp Phe Arg Asn Phe Gln Ile Ile Glu Glu
225 230 235 240

Asp Ala Ala Leu Val Glu Ile Gly Pro Arg Phe Val Leu Asn Leu Ile
245 250 255

Lys Ile Phe Gln Gly Ser Phe Gly Gly Pro Thr Leu Tyr Glu Asn Pro
260 265 270

His Tyr Gln Ser Pro Asn Met His Arg Arg Val Ile Arg Ser Ile Thr
275 280 285

Ala Ala Lys Tyr Arg Glu Lys Gln Gln Val Lys Asp Val Gln Lys Leu
290 295 300

Arg Lys Lys Glu Pro Lys Thr Leu Leu Pro His Asp Pro Thr Ala Asp
305 310 315 320

Val Phe Val Thr Pro Ala Glu Glu Lys Pro Ile Glu Ile Gln Trp Val
325 330 335

Lys Pro Glu Pro Lys Val Asp Leu Lys Ala Arg Lys Lys Arg Ile Tyr
340 345 350

Lys Arg Gln Arg Lys Met Lys Gln Arg Met Asp Ser Gly Lys Thr Lys
355 360 365

<210> 889
<211> 273
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (32)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 889
Leu Ala Ser Ala Trp Cys Ser Cys Ala Arg Val Ser Ala Gly Ser Ala
1 5 10 15

Leu Arg Phe Pro Gly Met Glu Ser Glu Met Glu Thr Gln Ser Ala Xaa
20 25 30

Ala Glu Glu Gly Phe Thr Gln Val Thr Arg Lys Gly Gly Arg Arg Ala
35 40 45

Lys Lys Arg Gln Ala Glu Gln Leu Ser Ala Ala Gly Glu Gly Gly Asp
50 55 60

Ala Gly Arg Met Asp Thr Glu Glu Ala Arg Pro Ala Lys Arg Pro Val
65 70 75 80

Phe Pro Pro Leu Cys Gly Asp Gly Leu Leu Ser Gly Lys Glu Glu Thr
85 90 95

Arg Lys Ile Pro Val Pro Ala Asn Arg Tyr Thr Pro Leu Lys Glu Asn

100 105 110

Trp Met Lys Ile Phe Thr Pro Ile Val Glu His Leu Gly Leu Gln Ile
115 120 125

Arg Phe Asn Leu Lys Ser Arg Asn Val Glu Ile Arg Thr Cys Lys Glu
130 135 140

Thr Lys Asp Val Ser Ala Leu Thr Lys Ala Ala Asp Phe Val Lys Ala
145 150 155 160

Phe Ile Leu Gly Phe Gln Val Glu Asp Ala Leu Ala Leu Ile Arg Leu
165 170 175

Asp Asp Leu Phe Leu Glu Ser Phe Glu Ile Thr Asp Val Lys Pro Leu
180 185 190

Lys Gly Asp His Leu Ser Arg Ala Ile Gly Arg Ile Ala Gly Lys Gly
195 200 205

Gly Lys Thr Lys Phe Thr Ile Glu Asn Val Thr Arg Thr Arg Ile Val
210 215 220

Leu Ala Asp Val Lys Val His Ile Leu Gly Ser Phe Gln Asn Ile Lys
225 230 235 240

Met Ala Arg Thr Ala Ile Cys Asn Leu Ile Leu Gly Asn Pro Pro Ser
245 250 255

Lys Val Tyr Gly Asn Ile Arg Ala Val Ala Ser Arg Ser Ala Asp Arg
260 265 270

Phe

<210> 890
<211> 60
<212> PRT
<213> Homo sapiens

<400> 890
Val Thr Ser Lys Thr Gln Val Gly Leu Phe Lys Phe Leu Lys Phe Glu
1 5 10 15

Ile Phe Tyr Leu Gln Lys Ile Val Leu Cys Phe Ile Ile Ser Gln Met
20 25 30

Ser Val Arg Phe Leu Ser Thr Asn Asp His Ala Ser Ile Phe Phe Ser
35 40 45

Phe Lys Pro Pro Asn Gln Tyr Phe Ser Phe Lys Phe
50 55 60

<210> 891
<211> 257
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (224)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 891
Ala Arg Gly Ala Val Thr Arg Phe Pro Pro Arg Ser Leu Gly Arg Cys
1 5 10 15

His Gly Phe Gly Val Gly Asp Arg Ala Val Thr Met Ala Arg Leu Ala
20 25 30

Leu Ser Pro Val Pro Ser His Trp Met Val Ala Leu Leu Leu Leu Leu
35 40 45

Ser Ala Ala Glu Pro Val Pro Ala Ala Arg Ser Glu Asp Arg Tyr Arg
50 55 60

Asn Pro Lys Gly Ser Ala Cys Ser Arg Ile Trp Gln Ser Pro Arg Phe
65 70 75 80

Ile Ala Arg Lys Arg Gly Phe Thr Val Lys Met His Cys Tyr Met Asn
85 90 95

Ser Ala Ser Gly Asn Val Ser Trp Leu Trp Lys Gln Glu Met Asp Glu
100 105 110

Asn Pro Gln Gln Leu Lys Leu Glu Lys Gly Arg Met Glu Glu Ser Gln
115 120 125

Asn Glu Ser Leu Ala Thr Leu Thr Ile Gln Gly Ile Arg Phe Glu Asp
130 135 140

Asn Gly Ile Tyr Phe Cys Gln Gln Lys Cys Asn Asn Thr Ser Glu Val
145 150 155 160

Tyr Gln Gly Cys Gly Thr Glu Leu Arg Val Met Gly Phe Ser Thr Leu
165 170 175

Ala Gln Leu Lys Gln Arg Asn Thr Leu Lys Asp Gly Ile Ile Met Ile

180 185 190

Gln Thr Leu Leu Ile Ile Leu Phe Ile Ile Val Pro Ile Phe Leu Leu
195 200 205

Leu Asp Lys Asp Asp Ser Lys Ala Gly Met Glu Glu Asp His Thr Xaa
210 215 220

Glu Gly Leu Asp Ile Asp Gln Thr Ala Thr Tyr Glu Asp Ile Val Thr
225 230 235 240

Leu Arg Thr Gly Glu Val Lys Trp Ser Val Gly Glu His Pro Gly Gln
245 250 255

Glu

<210> 892
<211> 52
<212> PRT
<213> Homo sapiens

<400> 892
Cys His Ser Cys Tyr Gln Ala Val Pro Leu Pro Gly Val His Ile Gly
1 5 10 15

Leu Thr Gly Leu Ser Ile Phe Leu Phe Leu Ile Phe Glu Phe Tyr His
20 25 30

Leu Ala Leu Asn Cys Ser Thr Trp Ile Trp Gly Ser Ser Leu Cys Pro
35 40 45

Lys Asp Leu Leu
50

<210> 893
<211> 50
<212> PRT
<213> Homo sapiens

<400> 893
Gly Arg Glu Gly Arg Glu Glu Arg Glu Asp Lys Glu Ser Pro Thr Ser
1 5 10 15

Phe Gln Asn Val Met Arg Ile Leu Ser Thr Tyr Gly Pro Trp His Asp
20 25 30

His Met Thr Cys Arg Ala Pro Val Ile Glu Leu Ile Phe Ile Phe Ser
35 40 45

Leu Val
50

<210> 894
<211> 255
<212> PRT
<213> Homo sapiens

<400> 894
Ala Pro Ser Ala Arg Asp Val Ser Arg Cys Ala His Arg Ala Arg Pro
1 5 10 15

Gly Ala Ile Met Leu Leu Leu Pro Ser Ala Ala Asp Gly Arg Gly Thr
20 25 30

Ala Ile Thr His Ala Leu Thr Ser Ala Ser Thr Leu Cys Gln Val Glu
35 40 45

Pro Val Gly Arg Trp Phe Glu Ala Phe Val Lys Arg Arg Asn Arg Asn
50 55 60

Ala Ser Ala Ser Phe Gln Glu Leu Glu Asp Lys Lys Glu Leu Ser Glu
65 70 75 80

Glu Ser Glu Asp Glu Glu Leu Gln Leu Glu Glu Phe Pro Met Leu Lys
85 90 95

Thr Leu Asp Pro Lys Asp Trp Lys Asn Gln Asp His Tyr Ala Val Leu
100 105 110

Gly Leu Gly His Val Arg Tyr Lys Ala Thr Gln Arg Gln Ile Lys Ala
115 120 125

Ala His Lys Ala Met Val Leu Lys His His Pro Asp Lys Arg Lys Ala
130 135 140

Ala Gly Glu Pro Ile Lys Glu Gly Asp Asn Asp Tyr Phe Thr Cys Ile
145 150 155 160

Thr Lys Ala Tyr Glu Met Leu Ser Asp Pro Val Lys Arg Arg Ala Phe
165 170 175

Asn Ser Val Asp Pro Thr Phe Asp Asn Ser Val Pro Ser Lys Ser Glu
180 185 190

Ala Lys Asp Asn Phe Phe Glu Val Phe Thr Pro Val Phe Glu Arg Asn

195 200 205

Ser Arg Trp Ser Asn Lys Lys Asn Val Pro Lys Leu Gly Asp Met Asn
210 215 220

Ser Ser Phe Glu Asp Val Asp Ile Phe Tyr Ser Phe Trp Tyr Asn Phe
225 230 235 240

Asp Ser Trp Arg Glu Phe Ser Tyr Leu Asp Glu Glu Glu Lys Lys
245 250 255

<210> 895
<211> 149
<212> PRT
<213> Homo sapiens

<400> 895
Val Glu Asn Gln Asn Pro Ala Asp Pro Leu Asn Glu Glu Leu Gly Asp
1 5 10 15

Glu Asp Ser Glu Lys Lys Arg Lys Gly Ala Phe Phe Ser Trp Ser Arg
20 25 30

Thr Arg Ser Thr Gly Arg Ser Gln Lys Lys Arg Glu His Gly Asp His
35 40 45

Ala Asp Asp Ala Leu His Ala Asn Gly Gly Leu Cys Arg Arg Glu Ser
50 55 60

Gln Gly Ser Val Ser Ser Ala Gly Ser Leu Asp Leu Ser Glu Ala Cys
65 70 75 80

Arg Thr Leu Ala Pro Glu Lys Asp Lys Ala Thr Lys His Cys Cys Ile
85 90 95

His Leu Pro Asp Gly Thr Ser Cys Val Val Ala Val Lys Ala Gly Phe
100 105 110

Ser Ile Lys Asp Ile Leu Ser Gly Leu Cys Glu Arg His Gly Ile Asn
115 120 125

Gly Ala Ala Ala Asp Leu Phe Leu Val Gly Gly Asp Lys Pro Leu Val
130 135 140

Leu Ala Pro Arg Gln
145

<210> 896
<211> 635
<212> PRT
<213> Homo sapiens

<400> 896
His Glu Arg Gly Gln Arg Ala His Ser Ala Asp Ala Arg Ala Ala Gly
1 5 10 15

Ser Thr Arg Ser Thr Ala Gly Ala Gly Leu Gly Gln Arg Leu Arg Cys
20 25 30

Cys Trp Ile Val Val Phe Ser Gly Ile Glu Asp Thr His Gln Lys Pro
35 40 45

Lys Met Pro Lys Pro Ile Asn Val Arg Val Thr Thr Met Asp Ala Glu
50 55 60

Leu Glu Phe Ala Ile Gln Pro Asn Thr Thr Gly Lys Gln Leu Phe Asp
65 70 75 80

Gln Val Val Lys Thr Ile Gly Leu Arg Glu Val Trp Tyr Phe Gly Leu
85 90 95

His Tyr Val Asp Asn Lys Gly Phe Pro Thr Trp Leu Lys Leu Asp Lys
100 105 110

Lys Val Ser Ala Gln Glu Val Arg Lys Glu Asn Pro Leu Gln Phe Lys
115 120 125

Phe Arg Ala Lys Phe Tyr Pro Glu Asp Val Ala Glu Glu Leu Ile Gln
130 135 140

Asp Ile Thr Gln Lys Leu Phe Phe Leu Gln Val Lys Glu Gly Ile Leu
145 150 155 160

Ser Asp Glu Ile Tyr Cys Pro Pro Glu Thr Ala Val Leu Leu Gly Ser
165 170 175

Tyr Ala Val Gln Ala Lys Phe Gly Asp Tyr Asn Lys Glu Val His Lys
180 185 190

Ser Gly Tyr Leu Ser Ser Glu Arg Leu Ile Pro Gln Arg Val Met Asp
195 200 205

Gln His Lys Leu Thr Arg Asp Gln Trp Glu Asp Arg Ile Gln Val Trp
210 215 220

His Ala Glu His Arg Gly Met Leu Lys Asp Asn Ala Met Leu Glu Tyr
225 230 235 240

Leu Lys Ile Ala Gln Asp Leu Glu Met Tyr Gly Ile Asn Tyr Phe Glu
245 250 255

Ile Lys Asn Lys Lys Gly Thr Asp Leu Trp Leu Gly Val Asp Ala Leu
260 265 270

Gly Leu Asn Ile Tyr Glu Lys Asp Asp Lys Leu Thr Pro Lys Ile Gly
275 280 285

Phe Pro Trp Ser Glu Ile Arg Asn Ile Ser Phe Asn Asp Lys Lys Phe
290 295 300

Val Ile Lys Pro Ile Asp Lys Lys Ala Pro Asp Phe Val Phe Tyr Ala
305 310 315 320

Pro Arg Leu Arg Ile Asn Lys Arg Ile Leu Gln Leu Cys Met Gly Asn
325 330 335

His Glu Leu Tyr Met Arg Arg Arg Lys Pro Asp Thr Ile Glu Val Gln
340 345 350

Gln Met Lys Ala Gln Ala Arg Glu Glu Lys His Gln Lys Gln Leu Glu
355 360 365

Arg Gln Gln Leu Glu Thr Glu Lys Lys Arg Arg Glu Thr Val Glu Arg
370 375 380

Glu Lys Glu Gln Met Met Arg Glu Lys Glu Glu Leu Met Leu Arg Leu
385 390 395 400

Gln Asp Tyr Glu Glu Lys Thr Lys Lys Ala Glu Arg Glu Leu Ser Glu
405 410 415

Gln Ile Gln Arg Ala Leu Gln Leu Glu Glu Glu Arg Lys Arg Ala Gln
420 425 430

Glu Glu Ala Glu Arg Leu Glu Ala Asp Arg Met Ala Ala Leu Arg Ala
435 440 445

Lys Glu Glu Leu Glu Arg Gln Ala Val Asp Gln Ile Lys Ser Gln Glu
450 455 460

Gln Leu Ala Ala Glu Leu Ala Glu Tyr Thr Ala Lys Ile Ala Leu Leu
465 470 475 480

Glu Glu Ala Arg Arg Arg Lys Glu Asp Glu Val Glu Glu Trp Gln His
485 490 495

Arg Ala Lys Glu Ala Gln Asp Asp Leu Val Lys Thr Lys Glu Glu Leu
500 505 510

His Leu Val Met Thr Ala Pro Pro Pro Pro Pro Pro Pro Val Tyr Glu
515 520 525

Pro Val Ser Tyr His Val Gln Glu Ser Leu Gln Asp Glu Gly Ala Glu
530 535 540

Pro Thr Gly Tyr Ser Ala Glu Leu Ser Ser Glu Gly Ile Arg Asp Asp
545 550 555 560

Arg Asn Glu Glu Lys Arg Ile Thr Glu Ala Glu Lys Asn Glu Arg Val
565 570 575

Gln Arg Gln Leu Leu Thr Leu Ser Ser Glu Leu Ser Gln Ala Arg Asp
580 585 590

Glu Asn Lys Arg Thr His Asn Asp Ile Ile His Asn Glu Asn Met Arg
595 600 605

Gln Gly Arg Asp Lys Tyr Lys Thr Leu Arg Gln Ile Arg Gln Gly Asn
610 615 620

Thr Lys Gln Arg Ile Asp Glu Phe Glu Ala Leu
625 630 635

<210> 897
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (12)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (21)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (26)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (29)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (30)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (37)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 897
Phe Val Phe Leu Gly Tyr Glu Glu Ile Ile Ile Xaa Leu Val Ser Ile
1 5 10 15

Phe Ile Asn Pro Xaa Ile Leu Tyr Leu Xaa Lys Ser Xaa Xaa Gly Gly
20 25 30

Gly Arg Pro Cys Xaa Asp Leu Pro Ile
35 40

<210> 898
<211> 128
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (83)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (92)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 898
Ser Leu Ala Gly Arg Ser Arg Trp Met Glu Ala Asn Gln His Ser Leu
1 5 10 15

Asn Ile Leu Gly Gln Lys Val Ser Met His Tyr Ser Asp Pro Lys Pro
20 25 30

Lys Ile Asn Glu Asp Trp Leu Cys Asn Lys Cys Gly Val Gln Asn Phe
35 40 45

Lys Arg Arg Glu Lys Cys Phe Lys Cys Gly Val Pro Lys Ser Glu Ala
50 55 60

Glu Gln Lys Leu Pro Leu Gly Thr Arg Leu Asp Gln Gln Thr Leu Pro

65 70 75 80

Leu Gly Xaa Arg Glu Leu Ser Gln Gly Leu Leu Xaa Leu Pro Gln Pro
85 90 95

Tyr Gln Ala Gln Gly Val Leu Ala Ser Gln Ala Leu Ser Gln Gly Ser
100 105 110

Glu Pro Ser Ser Glu Asn Ala Asn Asp Thr Ile Ile Leu Arg Asn Leu
115 120 125

<210> 899
<211> 92
<212> PRT
<213> Homo sapiens

<400> 899
Ile Trp Gln Phe Phe Ala Glu Val Ile Met Ser Phe Phe Gln Leu Leu
1 5 10 15

Met Lys Arg Lys Glu Leu Ile Pro Leu Val Val Phe Met Thr Val Ala
20 25 30

Ala Gly Gly Ala Ser Ser Phe Ala Val Tyr Ser Leu Trp Lys Thr Asp
35 40 45

Val Ile Leu Asp Arg Lys Lys Asn Pro Glu Pro Trp Glu Thr Val Asp
50 55 60

Pro Thr Val Pro Gln Lys Leu Ile Thr Ile Asn Gln Gln Trp Lys Pro
65 70 75 80

Ile Glu Glu Leu Gln Asn Val Gln Arg Val Thr Lys
85 90

<210> 900
<211> 73
<212> PRT
<213> Homo sapiens

<400> 900
Gly Gly Trp Phe Tyr Pro Phe Cys Leu Leu Phe Gly Thr Gln Leu Val
1 5 10 15

Phe Phe Gly Leu Leu Ser Ser Gly Ser Arg Ala Val Leu Ser Asn Thr
20 25 30

Val Thr Thr Cys Gly Cys Leu Lys Leu Ser Gln Leu Lys Ser His Lys
35 40 45

Ile Lys Asn Ser Phe Leu Ser Cys Thr Asn His Val Ser Arg Gly Val
50 55 60

Thr Val Cys Ser Ser Trp Leu Leu Tyr
65 70

<210> 901
<211> 120
<212> PRT
<213> Homo sapiens

<400> 901
Gly Pro Ala Leu Lys Met Gln Ala Gln Ala Pro Val Val Val Val Thr
1 5 10 15

Gln Pro Gly Val Gly Pro Gly Pro Ala Pro Gln Asn Ser Asn Trp Gln
20 25 30

Thr Gly Met Cys Asp Cys Phe Ser Asp Cys Gly Val Cys Leu Cys Gly
35 40 45

Thr Phe Cys Phe Pro Cys Leu Gly Cys Gln Val Ala Ala Asp Met Asn
50 55 60

Glu Cys Cys Leu Cys Gly Thr Ser Val Ala Met Arg Thr Leu Tyr Arg
65 70 75 80

Thr Arg Tyr Gly Ile Pro Gly Ser Ile Cys Asp Asp Tyr Met Ala Thr
85 90 95

Leu Cys Cys Pro His Cys Thr Leu Cys Gln Ile Lys Arg Asp Ile Asn
100 105 110

Arg Arg Arg Ala Met Arg Thr Phe
115 120

<210> 902
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 902
Xaa Glu Pro Lys Pro Ser Val Glu Pro Val Lys Ser Ile Ser Ser Met
1   5   10   15

Glu Leu Lys Thr Glu Pro Phe Asp Asp Phe Leu Phe Pro Ala Ser Ser
            20   25   30

Arg Pro Ser Gly Ser Glu Thr Ala Arg Ser Val Pro Asp Met Asp Leu
        35   40   45

Ser Gly Ser Phe Tyr Ala Ala Asp Trp Glu Pro Leu His Ser Gly Ser
    50   55   60

Leu Gly Met Gly Pro Met Ala Gln Ser Trp Ser Pro Cys Ala Leu Arg
65   70   75   80

Trp Ser Pro Val Leu Pro Ala Ala Leu Leu Thr Arg Leu Pro Ser Ser
                85   90   95

Ser Pro Thr Pro Arg Leu Thr Pro Ser Pro Ala Val Gln Leu Pro Thr
            100   105   110

Ala Arg Ala Ala Ala Ala Met Ser Leu Pro Leu Thr Arg Ser Ala His
        115   120   125

Pro Arg Cys Trp Pro Cys Glu Gly Ala Gly Lys Gly Arg Gln Pro Ala
    130   135   140

Pro Thr Ser Ala Thr Ala Arg Ala Gly Ala Leu Gln Arg Gly Glu Thr
145   150   155   160

His Leu Pro

<210> 903
<211> 478
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (20)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (24)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (451)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 903
Ala Asp Thr Lys Pro Glu Arg Gly Val Ser Ser Ala Val Phe Ala Ser
1   5   10   15

Gly Ser Glu Xaa Arg Arg Leu Xaa Cys Val Leu Leu Ser Ser Ser Glu
            20   25   30

Thr Arg Leu Leu Ser Gly Thr Leu Leu Trp Ile Pro Arg Ala Tyr Ser
        35   40   45

Thr Arg Ser Lys Met Ala Glu Leu Asn Thr His Val Asn Val Lys Glu
    50   55   60

Lys Ile Tyr Ala Val Arg Ser Val Val Pro Asn Lys Ser Asn Asn Glu
65   70   75   80

Ile Val Leu Val Leu Gln Gln Phe Asp Phe Asn Val Asp Lys Ala Val
                85   90   95

Gln Ala Phe Val Asp Gly Ser Ala Ile Gln Val Leu Lys Glu Trp Asn
            100   105   110

Met Thr Gly Lys Lys Lys Asn Asn Lys Arg Lys Arg Ser Lys Ser Lys
        115   120   125

Gln His Gln Gly Asn Lys Asp Ala Lys Asp Lys Val Glu Arg Pro Glu
    130   135   140

Ala Gly Pro Leu Gln Pro Gln Pro Pro Gln Ile Gln Asn Gly Pro Met
145   150   155   160

Asn Gly Cys Glu Lys Asp Ser Ser Ser Thr Asp Ser Ala Asn Glu Lys
                165   170   175

Pro Ala Leu Ile Pro Arg Glu Lys Lys Ile Ser Ile Leu Glu Glu Pro
            180   185   190

Ser Lys Ala Leu Arg Gly Val Thr Gly Pro Asn Ile Glu Lys Ser Val
        195   200   205

Lys Asp Leu Gln Arg Cys Thr Val Ser Leu Thr Arg Tyr Arg Val Met

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    210                 215                 220

Ile Lys Glu Glu Val Asp Ser Ser Val Lys Lys Ile Lys Ala Ala Phe
225                 230                 235                 240

Ala Glu Leu His Asn Cys Ile Ile Asp Lys Glu Val Ser Leu Met Ala
                245                 250                 255

Glu Met Asp Lys Val Lys Glu Glu Ala Met Glu Ile Leu Thr Ala Arg
            260                 265                 270

Gln Lys Lys Ala Glu Glu Leu Lys Arg Leu Thr Asp Leu Ala Ser Gln
        275                 280                 285

Met Ala Glu Met Gln Leu Ala Glu Leu Arg Ala Glu Ile Lys His Phe
    290                 295                 300

Val Ser Glu Arg Lys Tyr Asp Glu Glu Leu Gly Lys Ala Ala Arg Phe
305                 310                 315                 320

Ser Cys Asp Ile Glu Gln Leu Lys Ala Gln Ile Met Leu Cys Gly Glu
                325                 330                 335

Ile Thr His Pro Lys Asn Asn Tyr Ser Ser Arg Thr Pro Cys Ser Ser
            340                 345                 350

Leu Leu Pro Leu Leu Asn Ala His Ala Ala Thr Ser Gly Lys Gln Ser
        355                 360                 365

Asn Phe Ser Arg Lys Ser Ser Thr His Asn Lys Pro Ser Glu Gly Lys
    370                 375                 380

Ala Ala Asn Pro Lys Met Val Ser Ser Leu Pro Ser Thr Ala Asp Pro
385                 390                 395                 400

Ser His Gln Thr Met Pro Ala Asn Lys Gln Asn Gly Ser Ser Asn Gln
                405                 410                 415

Arg Arg Arg Phe Asn Pro Gln Tyr His Asn Asn Arg Leu Asn Gly Pro
            420                 425                 430

Ala Lys Ser Gln Gly Ser Gly Asn Glu Ala Glu Pro Leu Gly Lys Gly
        435                 440                 445

Asn Ser Xaa His Glu His Arg Arg Gln Pro His Asn Gly Phe Arg Pro
    450                 455                 460

Lys Asn Lys Gly Gly Ala Lys Ile Lys Arg Leu Pro Trp Gly
465                 470                 475
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<210> 904
<211> 88
<212> PRT
<213> Homo sapiens

<400> 904
Ala Phe His Phe Gly Ser Val Ala Lys Ala Thr Thr Thr Ser Val Gly
1 5 10 15

Thr Val Gly Tyr Tyr Gln Phe Met Asp Arg Leu Leu Ser Gly Met Val
20 25 30

Thr Ala Asn Thr Ile Val Arg Lys Pro Lys Arg Ser Leu Val Arg Val
35 40 45

Glu Ser Val Thr Pro Leu Pro Thr Thr Gly Cys Cys Leu Leu Ser Leu
50 55 60

Arg Arg Leu Arg Gln Asn Leu Leu Gln Arg Thr Arg Arg Val Val Tyr
65 70 75 80

Gln Arg Cys Leu Thr Thr Leu Arg
85

<210> 905
<211> 508
<212> PRT
<213> Homo sapiens

<400> 905
Phe Arg Ile Val Leu Pro Gly Trp Gln Gln Gly Pro Ser Gly Thr Met
1 5 10 15

Ser Ala Leu Gly Val Thr Val Ala Leu Leu Val Trp Ala Ala Phe Leu
20 25 30

Leu Leu Val Ser Met Trp Arg Gln Val His Ser Ser Trp Asn Leu Pro
35 40 45

Pro Gly Pro Phe Pro Leu Pro Ile Ile Gly Asn Leu Phe Gln Leu Glu
50 55 60

Leu Lys Asn Ile Pro Lys Ser Phe Thr Arg Leu Ala Gln Arg Phe Gly
65 70 75 80

Pro Val Phe Thr Leu Tyr Val Gly Ser Gln Arg Met Val Val Met His
85 90 95

Gly Tyr Lys Ala Val Lys Glu Ala Leu Leu Asp Tyr Lys Asp Glu Phe
100 105 110

Ser Gly Arg Gly Asp Leu Pro Ala Phe His Ala His Arg Asp Arg Gly
115 120 125

Ile Ile Phe Asn Asn Gly Pro Thr Trp Lys Asp Ile Arg Arg Phe Ser
130 135 140

Leu Thr Thr Leu Arg Asn Tyr Gly Met Gly Lys Gln Gly Asn Glu Ser
145 150 155 160

Arg Ile Gln Arg Glu Ala His Phe Leu Leu Glu Ala Leu Arg Lys Thr
165 170 175

Gln Gly Gln Pro Phe Asp Pro Thr Phe Leu Ile Gly Cys Ala Pro Cys
180 185 190

Asn Val Ile Ala Asp Ile Leu Phe Arg Lys His Phe Asp Tyr Asn Asp
195 200 205

Glu Lys Phe Leu Arg Leu Met Tyr Leu Phe Asn Glu Asn Phe His Leu
210 215 220

Leu Ser Thr Pro Trp Leu Gln Leu Tyr Asn Asn Phe Pro Ser Phe Leu
225 230 235 240

His Tyr Leu Pro Gly Ser His Arg Lys Val Ile Lys Asn Val Ala Glu
245 250 255

Val Lys Glu Tyr Val Ser Glu Arg Val Lys Glu His His Gln Ser Leu
260 265 270

Asp Pro Asn Cys Pro Arg Asp Leu Thr Asp Cys Leu Leu Val Glu Met
275 280 285

Glu Lys Glu Lys His Ser Ala Glu Arg Leu Tyr Thr Met Asp Gly Ile
290 295 300

Thr Val Thr Val Ala Asp Leu Phe Phe Ala Gly Thr Glu Thr Thr Ser
305 310 315 320

Thr Thr Leu Arg Tyr Gly Leu Leu Ile Leu Met Lys Tyr Pro Glu Ile
325 330 335

Glu Glu Lys Leu His Glu Glu Ile Asp Arg Val Ile Gly Pro Ser Arg
340 345 350

Ile Pro Ala Ile Lys Asp Arg Gln Glu Met Pro Tyr Met Asp Ala Val
355 360 365

Val His Glu Ile Gln Arg Phe Ile Thr Leu Val Pro Ser Asn Leu Pro
370 375 380

His Glu Ala Thr Arg Asp Thr Ile Phe Arg Gly Tyr Leu Ile Pro Lys
385 390 395 400

Gly Thr Val Val Val Pro Thr Leu Asp Ser Val Leu Tyr Asp Asn Gln
405 410 415

Glu Phe Pro Asp Pro Glu Lys Phe Lys Pro Glu His Phe Leu Asn Glu
420 425 430

Asn Gly Lys Phe Lys Tyr Ser Asp Tyr Phe Lys Pro Phe Ser Thr Gly
435 440 445

Lys Arg Val Cys Ala Gly Glu Gly Leu Ala Arg Met Glu Leu Phe Leu
450 455 460

Leu Leu Cys Ala Ile Leu Gln His Phe Asn Leu Lys Pro Leu Val Asp
465 470 475 480

Pro Lys Asp Ile Asp Leu Ser Pro Ile His Ile Gly Phe Gly Cys Ile
485 490 495

Pro Pro Arg Tyr Lys Leu Cys Val Ile Pro Arg Ser
500 505

<210> 906
<211> 290
<212> PRT
<213> Homo sapiens

<400> 906
Leu Gly Pro Arg Pro Leu Ala Leu Glu Arg Gly Leu Arg Gly Thr His
1 5 10 15

Met Glu Asn Val Tyr Asp Phe Tyr Lys Pro Asn Leu Ala Ser Glu Tyr
20 25 30

Pro Ile Val Asp Gly Lys Leu Ser Ile Gln Cys Tyr Leu Arg Ala Leu
35 40 45

Asp Arg Cys Tyr Thr Ser Tyr Arg Lys Lys Ile Gln Asn Gln Trp Lys
50 55 60

Gln Ala Gly Ser Asp Arg Pro Phe Thr Leu Asp Asp Leu Gln Tyr Met
65 70 75 80

Ile Phe His Thr Pro Phe Cys Lys Met Val Gln Lys Ser Leu Ala Arg

85 90 95

Leu Met Phe Asn Asp Phe Leu Ser Ala Ser Ser Asp Thr Gln Thr Ser
100 105 110

Leu Tyr Lys Gly Leu Glu Ala Phe Gly Gly Leu Lys Leu Glu Asp Thr
115 120 125

Tyr Thr Asn Lys Asp Leu Asp Lys Ala Leu Leu Lys Ala Ser Gln Asp
130 135 140

Met Phe Asp Lys Lys Thr Lys Ala Ser Leu Tyr Leu Ser Thr His Asn
145 150 155 160

Gly Asn Met Tyr Thr Ser Ser Leu Tyr Gly Cys Leu Ala Ser Leu Leu
165 170 175

Ser His His Ser Ala Gln Glu Leu Ala Gly Ser Arg Ile Gly Ala Phe
180 185 190

Ser Tyr Gly Ser Gly Leu Ala Ala Ser Phe Phe Ser Phe Arg Val Ser
195 200 205

Gln Asp Ala Ala Pro Gly Ser Pro Leu Asp Lys Leu Val Ser Ser Thr
210 215 220

Ser Asp Leu Pro Lys Arg Leu Ala Ser Arg Lys Cys Val Ser Pro Glu
225 230 235 240

Glu Phe Thr Glu Ile Met Asn Gln Arg Glu Gln Phe Tyr His Lys Val
245 250 255

Asn Phe Ser Pro Pro Gly Asp Thr Asn Ser Leu Phe Pro Gly Thr Trp
260 265 270

Tyr Leu Glu Arg Val Asp Glu Gln His Arg Arg Lys Tyr Ala Arg Arg
275 280 285

Pro Val
290

<210> 907
<211> 242
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (198)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (215)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (222)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (242)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 907
Leu Val Pro Asn Ser Ala Arg Val Gly Thr Arg Ser Lys Gly Val Cys
1 5 10 15

Val His Gly Asn Ala Glu Tyr Gln Pro Gly Ser Pro Val Tyr Ser Ser
20 25 30

Lys Cys Gln Asp Cys Val Cys Thr Asp Lys Val Asp Asn Asn Thr Leu
35 40 45

Leu Asn Val Ile Ala Cys Thr His Val Pro Cys Asn Thr Ser Cys Ser
50 55 60

Pro Gly Phe Glu Leu Met Glu Ala Pro Gly Glu Cys Cys Lys Lys Cys
65 70 75 80

Glu Gln Thr His Cys Ile Ile Lys Arg Pro Asp Asn Gln His Val Ile
85 90 95

Leu Lys Pro Gly Asp Phe Lys Ser Asp Pro Lys Asn Asn Cys Thr Phe
100 105 110

Phe Ser Cys Val Lys Ile His Asn Gln Leu Ile Ser Ser Val Ser Asn
115 120 125

Ile Thr Cys Pro Asn Phe Asp Ala Ser Ile Cys Ile Pro Gly Ser Ile
130 135 140

Thr Phe Met Pro Asn Gly Cys Cys Lys Thr Cys Thr Pro Arg Asn Glu
145 150 155 160

Thr Arg Val Pro Cys Ser Thr Val Pro Val Thr Thr Glu Val Ser Tyr
165 170 175

Ala Gly Cys Thr Lys Thr Val Leu Met Asn His Cys Ser Gly Ser Cys
180 185 190

Gly Thr Phe Val Met Xaa Ser Ala Lys Ala Arg Pro Trp Thr Thr Ala
195 200 205

Cys Ser Cys Cys Lys Glu Xaa Lys Thr Ser Gln Arg Glu Xaa Val Leu
210 215 220

Thr Ala Gln Trp Arg Ser Leu Thr His Thr Tyr Thr Thr Ser Arg Leu
225 230 235 240

Pro Xaa

<210> 908
<211> 119
<212> PRT
<213> Homo sapiens

<400> 908
Leu Gly Leu Ala Pro Ala Leu Gly Pro Ala Ser Arg Arg Ser Arg Glu
1 5 10 15

Met Ser Asp Cys Tyr Thr Glu Leu Glu Lys Ala Val Ile Val Leu Val
20 25 30

Glu Asn Phe Tyr Lys Tyr Val Ser Lys Tyr Ser Leu Val Lys Asn Lys
35 40 45

Ile Ser Lys Ser Ser Phe Arg Glu Met Leu Gln Lys Glu Leu Asn His
50 55 60

Met Leu Ser Asp Thr Gly Asn Arg Lys Ala Ala Asp Lys Leu Ile Gln
65 70 75 80

Asn Leu Asp Ala Asn His Asp Gly Arg Ile Ser Phe Asp Glu Tyr Trp
85 90 95

Thr Leu Ile Gly Gly Ile Thr Gly Pro Ile Ala Lys Leu Ile His Glu
100 105 110

Gln Glu Gln Gln Ser Ser Ser
115

<210> 909
<211> 171

<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (162)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 909
Leu Ile Ala Cys His Phe Gln Val His Phe Leu Phe Ile Phe Met Phe
1 5 10 15

Met Val Asp Cys Thr Phe Pro Ser Pro Pro Ser Gly Met Gly Gly Gly
20 25 30

Gly Glu Gly Gly Pro Trp Ala Leu Gln Ser His Leu Ser Arg Glu Ile
35 40 45

Pro Phe Gly Thr Gly Gly Arg Lys Ala Ala Arg Arg Gln Gln Pro Trp
50 55 60

Leu Leu Ser Phe Gly Arg Leu Gly Lys Gly Leu Pro Pro Ala Leu Gly
65 70 75 80

Phe Gln Gly Leu Thr Gly Gly Val Glu Arg Glu Gly Gly Thr Ser Ile
85 90 95

Thr Leu Lys Val Glu Ser Ser Tyr Phe Leu Arg Cys Glu Gly Phe Phe
100 105 110

Ile Ser Leu Phe Ser Glu Cys Gln Gly Ser Glu Val Pro Leu Thr Val
115 120 125

Asn Leu Trp Trp Ala Gly Ala Gly Gly Glu Gly Gly Gly Leu Ala Pro
130 135 140

Ser Leu Pro Ala Phe Cys Cys Pro Cys Leu Thr Met Pro Ala Asn Trp
145 150 155 160

Arg Xaa His Gly Cys Thr Ser Ile Pro Pro Glu
165 170

<210> 910
<211> 46
<212> PRT
<213> Homo sapiens

<220>
<221> SITE

<222> (27)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 910
Gly Ser Pro Thr Glu Thr Leu Leu Arg Leu Leu Leu Pro Leu Asp Ser
1 5 10 15

Gln Val Arg Pro Ser Ser Gln Arg Ser Ala Xaa Ala Val Gly Arg Pro
20 25 30

Arg Arg Gly Arg Ser Glu Gly Leu Thr Lys Pro Ser Asn Arg
35 40 45

<210> 911
<211> 1242
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (224)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (1013)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (1034)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 911
Ala Pro His Leu Thr Leu Arg Pro Cys Gly Cys Cys Ser Gly Ala Gly
1 5 10 15

Leu Leu Pro Gly Gln Gly Pro Gly Ile Met Tyr Ile Lys Gln Val Ile
20 25 30

Ile Gln Gly Phe Arg Ser Tyr Arg Asp Gln Thr Ile Val Asp Pro Phe
35 40 45

Ser Ser Lys His Asn Val Ile Val Gly Arg Asn Gly Ser Gly Lys Ser
50 55 60

Asn Phe Phe Tyr Ala Ile Gln Phe Val Leu Ser Asp Glu Phe Ser His
65 70 75 80

Leu Arg Pro Glu Gln Arg Leu Ala Leu Leu His Glu Gly Thr Gly Pro
85 90 95

Arg Val Ile Ser Ala Phe Val Glu Ile Ile Phe Asp Asn Ser Asp Asn
100 105 110

Arg Leu Pro Ile Asp Lys Glu Glu Val Ser Leu Arg Arg Val Ile Gly
115 120 125

Ala Lys Lys Asp Gln Tyr Phe Leu Asp Lys Lys Met Val Thr Lys Asn
130 135 140

Asp Val Met Asn Leu Leu Glu Ser Ala Gly Phe Ser Arg Ser Asn Pro
145 150 155 160

Tyr Tyr Ile Val Lys Gln Gly Lys Ile Asn Gln Met Ala Thr Ala Pro
165 170 175

Asp Ser Gln Arg Leu Lys Leu Leu Arg Glu Val Ala Gly Thr Arg Val
180 185 190

Tyr Asp Glu Arg Lys Glu Glu Ser Ile Ser Leu Met Lys Glu Thr Glu
195 200 205

Gly Lys Arg Glu Lys Ile Asn Glu Leu Leu Lys Tyr Ile Glu Glu Xaa
210 215 220

Leu His Thr Leu Glu Glu Glu Lys Glu Glu Leu Ala Gln Tyr Gln Lys
225 230 235 240

Trp Asp Lys Met Arg Arg Ala Leu Glu Tyr Thr Ile Tyr Asn Gln Glu
245 250 255

Leu Asn Glu Thr Arg Ala Lys Leu Asp Glu Leu Ser Ala Lys Arg Glu
260 265 270

Thr Ser Gly Glu Lys Ser Arg Gln Leu Arg Asp Ala Gln Gln Asp Ala
275 280 285

Arg Asp Lys Met Glu Asp Ile Glu Arg Gln Val Arg Glu Leu Lys Thr
290 295 300

Lys Ile Ser Ala Met Lys Glu Glu Lys Glu Gln Leu Ser Ala Glu Arg
305 310 315 320

Gln Glu Gln Ile Lys Gln Arg Thr Lys Leu Glu Leu Lys Ala Lys Asp
325 330 335

Leu Gln Asp Glu Leu Ala Gly Asn Ser Glu Gln Arg Lys Arg Leu Leu
340 345 350

Lys Glu Arg Gln Lys Leu Leu Glu Lys Ile Glu Glu Lys Gln Lys Glu
355 360 365

Leu Ala Glu Thr Glu Pro Lys Phe Asn Ser Val Lys Glu Lys Glu Glu
370 375 380

Arg Gly Ile Ala Arg Leu Ala Gln Ala Thr Gln Glu Arg Thr Asp Leu
385 390 395 400

Tyr Ala Lys Gln Gly Arg Gly Ser Gln Phe Thr Ser Lys Glu Glu Arg
405 410 415

Asp Lys Trp Ile Lys Lys Glu Leu Lys Ser Leu Asp Gln Ala Ile Asn
420 425 430

Asp Lys Lys Arg Gln Ile Ala Ala Ile His Lys Asp Leu Glu Asp Thr
435 440 445

Glu Ala Asn Lys Glu Lys Asn Leu Glu Gln Tyr Asn Lys Leu Asp Gln
450 455 460

Asp Leu Asn Glu Val Lys Ala Arg Val Glu Glu Leu Asp Arg Lys Tyr
465 470 475 480

Tyr Glu Val Lys Asn Lys Lys Asp Glu Leu Gln Ser Glu Arg Asn Tyr
485 490 495

Leu Trp Arg Glu Glu Asn Ala Glu Gln Gln Ala Leu Ala Ala Lys Arg
500 505 510

Glu Asp Leu Glu Lys Lys Gln Gln Leu Leu Arg Ala Ala Thr Gly Lys
515 520 525

Ala Ile Leu Asn Gly Ile Asp Ser Ile Asn Lys Val Leu Asp His Phe
530 535 540

Arg Arg Lys Gly Ile Asn Gln His Val Gln Asn Gly Tyr His Gly Ile
545 550 555 560

Val Met Asn Asn Phe Glu Cys Glu Pro Ala Phe Tyr Thr Cys Val Glu
565 570 575

Val Thr Ala Gly Asn Arg Leu Phe Tyr His Ile Val Asp Ser Asp Glu
580 585 590

Val Ser Thr Lys Ile Leu Met Glu Phe Asn Lys Met Asn Leu Pro Gly
595 600 605

Glu Val Thr Phe Leu Pro Leu Asn Lys Leu Asp Val Arg Asp Thr Ala
610 615 620

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Tyr Pro Glu Thr Asn Asp Ala Ile Pro Met Ile Ser Lys Leu Arg Tyr
625                 630                 635                 640

Asn Pro Arg Phe Asp Lys Ala Phe Lys His Val Phe Gly Lys Thr Leu
                645                 650                 655

Ile Cys Arg Ser Met Glu Val Ser Thr Gln Leu Ala Arg Ala Phe Thr
            660                 665                 670

Met Asp Cys Ile Thr Leu Glu Gly Asp Gln Val Ser His Arg Gly Ala
        675                 680                 685

Leu Thr Gly Gly Tyr Tyr Asp Thr Arg Lys Ser Arg Leu Glu Leu Gln
    690                 695                 700

Lys Asp Val Arg Lys Ala Glu Glu Glu Leu Gly Glu Leu Glu Ala Lys
705                 710                 715                 720

Leu Asn Glu Asn Leu Arg Arg Asn Ile Glu Arg Ile Asn Asn Glu Ile
                725                 730                 735

Asp Gln Leu Met Asn Gln Met Gln Gln Ile Glu Thr Gln Gln Arg Lys
            740                 745                 750

Phe Lys Ala Ser Arg Asp Ser Ile Leu Ser Glu Met Lys Met Leu Lys
        755                 760                 765

Glu Lys Arg Gln Gln Ser Glu Lys Thr Phe Met Pro Lys Gln Arg Ser
    770                 775                 780

Leu Gln Ser Leu Glu Ala Ser Leu His Ala Met Glu Ser Thr Arg Glu
785                 790                 795                 800

Ser Leu Lys Ala Glu Leu Gly Thr Asp Leu Leu Ser Gln Leu Ser Leu
                805                 810                 815

Glu Asp Gln Lys Arg Val Asp Ala Leu Asn Asp Glu Ile Arg Gln Leu
            820                 825                 830

Gln Gln Glu Asn Arg Gln Leu Leu Asn Glu Arg Ile Lys Leu Glu Gly
        835                 840                 845

Ile Ile Thr Arg Val Glu Thr Tyr Leu Asn Glu Asn Leu Arg Lys Arg
    850                 855                 860

Leu Asp Gln Val Glu Gln Glu Leu Asn Glu Leu Arg Glu Thr Glu Gly
865                 870                 875                 880

Gly Thr Val Leu Thr Ala Thr Thr Ser Glu Leu Glu Ala Ile Asn Lys
                885                 890                 895
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Arg Val Lys Asp Thr Met Ala Arg Ser Glu Asp Leu Asp Asn Ser Ile
            900                 905                 910

Asp Lys Thr Glu Ala Gly Ile Lys Glu Leu Gln Lys Ser Met Glu Arg
        915                 920                 925

Trp Lys Asn Met Glu Lys Glu His Met Asp Ala Ile Asn His Asp Thr
    930                 935                 940

Lys Glu Leu Glu Lys Met Thr Asn Arg Gln Gly Met Leu Leu Lys Lys
945                 950                 955                 960

Lys Glu Glu Cys Met Lys Lys Ile Arg Glu Leu Gly Ser Leu Pro Gln
                965                 970                 975

Glu Ala Phe Glu Lys Tyr Gln Thr Leu Ser Leu Lys Gln Leu Phe Arg
            980                 985                 990

Lys Leu Glu Gln Cys Asn Thr Glu Leu Lys Lys Tyr Ser His Val Asn
        995                 1000                1005

Lys Lys Ala Leu Xaa Gln Phe Val Asn Phe Ser Glu Gln Lys Glu Lys
   1010                1015                1020

Leu Ile Lys Arg Gln Glu Glu Leu Asp Xaa Gly Tyr Lys Ser Ile Met
025                 1030                1035                1040

Glu Leu Met Asn Val Leu Glu Leu Arg Lys Tyr Glu Ala Ile Gln Leu
                1045                1050                1055

Thr Phe Lys Gln Val Ser Lys Asn Phe Ser Glu Val Phe Gln Lys Leu
            1060                1065                1070

Val Pro Gly Gly Lys Ala Thr Leu Val Met Lys Lys Gly Asp Val Glu
        1075                1080                1085

Gly Ser Gln Ser Gln Asp Glu Gly Glu Gly Ser Gly Glu Ser Glu Arg
   1090                1095                1100

Gly Ser Gly Ser Gln Ser Ser Val Pro Ser Val Asp Gln Phe Thr Gly
105                 1110                1115                1120

Val Gly Ile Arg Val Ser Phe Thr Gly Lys Gln Gly Glu Met Arg Glu
                1125                1130                1135

Met Gln Gln Leu Ser Gly Gly Gln Lys Ser Leu Val Ala Leu Ala Leu
            1140                1145                1150

Ile Phe Ala Ile Gln Lys Cys Asp Pro Ala Pro Phe Tyr Leu Phe Asp
        1155                1160                1165
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Glu Ile Asp Gln Ala Leu Asp Ala Gln His Arg Lys Ala Val Ser Asp
1170 1175 1180

Met Ile Met Glu Leu Ala Val His Ala Gln Phe Ile Thr Thr Thr Phe
185 1190 1195 1200

Arg Pro Glu Leu Leu Glu Ser Ala Asp Lys Phe Tyr Gly Val Lys Phe
1205 1210 1215

Arg Asn Lys Val Ser His Ile Asp Val Ile Thr Ala Glu Met Ala Lys
1220 1225 1230

Asp Phe Val Glu Asp Asp Thr Thr His Gly
1235 1240

<210> 912
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (109)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (143)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (158)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 912
Glu Glu Lys Thr Glu Pro Pro Leu Ser Phe Gly Arg Gly Trp Gln Thr
1 5 10 15

Val Lys Glu Met Ser Val Leu Arg His Val Gly Ile Gly Ser Asp Ala
20 25 30

Pro Pro Met Glu Arg Phe Val Asn Thr Lys Thr Trp Lys Val Arg Gly
35 40 45

Leu Ser Thr Lys Arg His Gly Arg Leu Gly Leu Ser Thr Gln Arg His
50 55 60

Gly Arg Leu Glu Val Cys Gln His Lys Asp Thr Gly Arg Met Gly Cys

65 70 75 80

Arg Arg Phe Arg Cys Phe Pro Phe Gly His Ile Leu Leu Ser Trp Arg
85 90 95

Thr Arg Phe Lys Thr Ala Trp Val Gly Lys Leu Glu Xaa Ser Trp Met
100 105 110

Gln Trp Ala Pro Cys Leu Leu Ile Pro Thr Leu Leu Gly Gly Ser Arg
115 120 125

Gln Glu Arg Ser Leu Gly Pro Lys Lys Ser Asn Leu Pro Ala Xaa Leu
130 135 140

Lys Ile His Thr Thr Cys Thr Pro Thr Leu Gly Phe Asn Xaa Asn Gln
145 150 155 160

Asn Pro Phe Leu Arg Lys Lys Lys Lys Lys Lys Lys
165 170

<210> 913
<211> 205
<212> PRT
<213> Homo sapiens

<400> 913
Arg Thr Arg Leu Glu Ala Arg Arg Gln Gly Trp Ala Ala Ala Ala Ala
1 5 10 15

Ala Val Met Glu Arg Gln Glu Glu Ser Leu Ser Ala Arg Pro Ala Leu
20 25 30

Glu Thr Glu Gly Leu Arg Phe Leu His Thr Thr Val Gly Ser Leu Leu
35 40 45

Ala Thr Tyr Gly Trp Tyr Ile Val Phe Ser Cys Ile Leu Leu Tyr Val
50 55 60

Val Phe Gln Lys Leu Ser Ala Arg Leu Arg Ala Leu Arg Gln Arg Gln
65 70 75 80

Leu Asp Arg Ala Ala Ala Ala Val Glu Pro Asp Val Val Val Lys Arg
85 90 95

Gln Glu Ala Leu Ala Ala Ala Arg Leu Lys Met Gln Glu Glu Leu Asn
100 105 110

Ala Gln Val Glu Lys His Lys Glu Lys Leu Lys Gln Leu Glu Glu Glu
115 120 125

Lys Arg Arg Gln Lys Ile Glu Met Trp Asp Ser Met Gln Glu Gly Lys
    130   135   140

Ser Tyr Lys Gly Asn Ala Lys Lys Pro Gln Glu Glu Asp Ser Pro Gly
145   150   155   160

Pro Ser Thr Ser Ser Val Leu Lys Arg Lys Ser Asp Arg Lys Pro Leu
                165   170   175

Arg Gly Gly Gly Tyr Asn Pro Leu Ser Gly Glu Gly Gly Gly Ala Cys
            180   185   190

Ser Trp Arg Pro Gly Arg Arg Gly Pro Ser Ser Gly Gly
        195   200   205

<210> 914
<211> 198
<212> PRT
<213> Homo sapiens

<400> 914
Ile Leu Gln Val Pro Val Arg Asn Ser Arg Val Tyr Pro Arg Val Arg
  1   5   10   15

Val Arg Asn Val Pro Trp Glu Phe Gly Asp Val Ile Pro Asp Tyr Val
             20   25   30

Leu Gly Gln Ser Thr Cys Ala Leu Phe Leu Ser Leu Arg Tyr His Asn
         35   40   45

Leu His Pro Asp Tyr Ile His Gly Arg Leu Gln Ser Leu Gly Lys Asn
     50   55   60

Phe Ala Leu Arg Val Leu Leu Val Gln Val Asp Val Lys Asp Pro Gln
 65   70   75   80

Gln Ala Leu Lys Glu Leu Ala Lys Met Cys Ile Leu Ala Asp Cys Thr
                 85   90   95

Leu Ile Leu Ala Trp Ser Pro Glu Glu Ala Gly Arg Tyr Leu Glu Thr
            100   105   110

Tyr Lys Ala Tyr Glu Gln Lys Pro Ala Asp Leu Leu Met Glu Lys Leu
        115   120   125

Glu Gln Asp Phe Val Ser Arg Val Thr Glu Cys Leu Thr Thr Val Lys
    130   135   140

Ser Val Asn Lys Thr Asp Ser Gln Thr Leu Leu Thr Thr Phe Gly Ser
145 150 155 160

Leu Glu Gln Leu Ile Ala Ala Ser Arg Glu Asp Leu Ala Leu Cys Pro
165 170 175

Gly Leu Gly Pro Gln Lys Ala Arg Arg Leu Phe Asp Val Leu His Glu
180 185 190

Pro Phe Leu Lys Val Pro
195

<210> 915
<211> 300
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (70)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 915
Gly Thr Val Asp Ile Glu Ser Leu Thr Gly Tyr Arg Thr Tyr Arg Cys
1 5 10 15

Ala His Pro Leu Ala Thr Leu Phe Lys Ile Leu Ala Ser Phe Tyr Ile
20 25 30

Ser Leu Val Ile Phe Tyr Gly Leu Ile Cys Met Tyr Thr Leu Trp Trp
35 40 45

Met Leu Arg Arg Ser Leu Lys Lys Tyr Ser Phe Glu Ser Ile Arg Glu
50 55 60

Glu Ser Ser Tyr Ser Xaa Ile Pro Asp Val Lys Asn Asp Phe Ala Phe
65 70 75 80

Met Leu His Leu Ile Asp Gln Tyr Asp Pro Leu Tyr Ser Lys Arg Phe
85 90 95

Ala Val Phe Leu Ser Glu Val Ser Glu Asn Lys Leu Arg Gln Leu Asn
100 105 110

Leu Asn Asn Glu Trp Thr Leu Asp Lys Leu Arg Gln Arg Leu Thr Lys
115 120 125

Asn Ala Gln Asp Lys Leu Glu Leu His Leu Phe Met Leu Ser Gly Ile
130 135 140

Pro Asp Thr Val Phe Asp Leu Val Glu Leu Glu Val Leu Lys Leu Glu
145 150 155 160

Leu Ile Pro Asp Val Thr Ile Pro Pro Ser Ile Ala Gln Leu Thr Gly
165 170 175

Leu Lys Glu Leu Trp Leu Tyr His Thr Ala Ala Lys Ile Glu Ala Pro
180 185 190

Ala Leu Ala Phe Leu Arg Glu Asn Leu Arg Ala Leu His Ile Lys Phe
195 200 205

Thr Asp Ile Lys Glu Ile Pro Leu Trp Ile Tyr Ser Leu Lys Thr Leu
210 215 220

Glu Glu Leu His Leu Thr Gly Asn Leu Ser Ala Glu Asn Asn Arg Tyr
225 230 235 240

Ile Val Ile Asp Gly Leu Arg Glu Leu Lys Arg Leu Lys Val Leu Arg
245 250 255

Leu Lys Ser Asn Leu Ser Lys Leu Pro Gln Val Val Thr Asp Val Gly
260 265 270

Val His Leu Gln Lys Leu Ser Ile Asn Asn Glu Gly Thr Lys Leu Ile
275 280 285

Val Leu Asn Ser Leu Lys Lys Met Ala Lys Pro Asp
290 295 300

<210> 916
<211> 157
<212> PRT
<213> Homo sapiens

<400> 916
Gln Val Ala Met Gly Ser Leu Ser Gly Leu Arg Leu Ala Ala Gly Ser
1 5 10 15

Cys Phe Arg Leu Cys Glu Arg Asp Val Ser Ser Ser Leu Arg Leu Thr
20 25 30

Arg Ser Ser Asp Leu Lys Arg Ile Asn Gly Phe Cys Thr Lys Pro Gln
35 40 45

Glu Ser Pro Gly Ala Pro Ser Arg Thr Tyr Asn Arg Val Pro Leu His
50 55 60

Lys Pro Thr Asp Trp Gln Lys Lys Ile Leu Ile Trp Ser Gly Arg Phe
65 70 75 80

Lys Lys Glu Asp Glu Ile Pro Glu Thr Val Ser Leu Glu Met Leu Asp
85 90 95

Ala Ala Lys Asn Lys Met Arg Val Lys Ile Ser Tyr Leu Met Ile Ala
100 105 110

Leu Thr Val Val Gly Cys Ile Phe Met Val Ile Glu Gly Lys Lys Ala
115 120 125

Ala Gln Arg His Glu Thr Leu Thr Ser Leu Asn Leu Glu Lys Lys Ala
130 135 140

Arg Leu Lys Glu Glu Ala Ala Met Lys Ala Lys Thr Glu
145 150 155

<210> 917
<211> 77
<212> PRT
<213> Homo sapiens

<400> 917
Ile Lys Val Met Asn Lys Thr Phe His Pro Leu Lys His Phe Pro Val
1 5 10 15

Leu Arg Phe Leu Phe Val Phe Val Val Ser Ser Pro Cys Tyr Pro Phe
20 25 30

Cys Pro Phe Ser Leu Thr Met Val Ile Trp Ser Leu Gly Ser Tyr Gln
35 40 45

Ser Pro Arg Asp Ile Leu Gln Ser Leu Ser Pro Phe Trp Val Asp Phe
50 55 60

Ile Leu Phe Tyr Phe Val Phe Phe Lys Lys Ile Thr Phe
65 70 75

<210> 918
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (10)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 918
Thr Phe Ala Ala Ala Leu Ser Ser Ser Xaa Gly Cys Pro Ser Arg Ala
1 5 10 15

Gln Val Thr Thr Asp Xaa Leu Pro Ala Cys Arg Ser Cys Ala Cys Arg
20 25 30

Pro Ala Gly Leu Cys Thr Leu Gln Thr Thr Leu Leu Trp Phe Leu Gly
35 40 45

Arg Ala Gln Gln Tyr Leu Ala Ala Trp Asp Pro Ala Ser Phe Leu Leu
50 55 60

Leu Ile Gln Lys Asp Leu Pro Pro Leu Leu His Glu Ala Glu Ala Leu
65 70 75 80

Tyr Ser Leu Ala Ser Glu Glu Ser Leu Ala Leu Glu Val Glu Gln Gln
85 90 95

Leu Gly Leu Glu Ile Gln Lys Leu Thr Ala Gln Ile Gln Leu Leu Pro
100 105 110

Glu Glu Ser Leu Ser Val Phe Ser Gln Glu Cys His Lys Gln Ala Met
115 120 125

Gln Gly Phe Lys Leu Tyr Met Pro Arg Gly Arg Tyr Trp Arg Leu Arg
130 135 140

Leu Cys Pro Glu Pro Pro Ser Ala Pro Ser Glu Tyr Ala Gly Leu Val
145 150 155 160

Val Arg Thr Val Leu Glu Pro Val Leu Gln Gly Leu Gln Gly Leu His
165 170 175

Leu Lys Pro Arg Pro Leu Pro Leu Val Arg Leu
180 185

<210> 919
<211> 260
<212> PRT
<213> Homo sapiens

<400> 919

Asn Ser Arg Thr Asp Val Arg Met Glu Thr Asp Leu Glu Val Ile Ile
1 5 10 15

Lys Asp Asn Ser Leu Val Leu Thr Pro Ser His Ile Lys Ala Tyr Met
20 25 30

Leu Met Thr Leu Gln Gly Leu Glu Tyr Leu His Gln His Trp Ile Leu
35 40 45

His Arg Asp Leu Lys Pro Asn Asn Leu Leu Leu Asp Glu Asn Gly Val
50 55 60

Leu Lys Leu Ala Asp Phe Gly Leu Ala Lys Ser Phe Gly Ser Pro Asn
65 70 75 80

Arg Ala Tyr Thr His Gln Val Val Thr Arg Trp Tyr Arg Ala Pro Glu
85 90 95

Leu Leu Phe Gly Ala Arg Met Tyr Gly Val Gly Val Asp Met Trp Ala
100 105 110

Val Gly Cys Ile Leu Ala Glu Leu Leu Leu Arg Val Pro Phe Leu Pro
115 120 125

Gly Asp Ser Asp Leu Asp Gln Leu Thr Arg Ile Phe Glu Thr Leu Gly
130 135 140

Thr Pro Thr Glu Glu Gln Trp Pro Asp Met Cys Ser Leu Pro Asp Tyr
145 150 155 160

Val Thr Phe Lys Ser Phe Pro Gly Ile Pro Leu His His Ile Phe Ser
165 170 175

Ala Ala Gly Asp Asp Leu Leu Asp Leu Ile Gln Gly Leu Phe Leu Phe
180 185 190

Asn Pro Cys Ala Arg Ile Thr Ala Thr Gln Ala Leu Lys Met Lys Tyr
195 200 205

Phe Ser Asn Ala Pro Gly Pro Thr Pro Gly Cys Gln Leu Pro Arg Pro
210 215 220

Asn Cys Pro Val Glu Thr Leu Lys Glu Gln Ser Asn Pro Ala Leu Ala
225 230 235 240

Ile Lys Arg Lys Arg Thr Glu Ala Leu Glu Gln Gly Gly Leu Pro Lys
245 250 255

Lys Leu Ile Phe
260

<210> 920
<211> 345
<212> PRT
<213> Homo sapiens

<400> 920
Leu Pro Val Arg Ala Glu Pro Thr Arg Ala Ala Ala Met Ser Gly Asp
1 5 10 15

Glu Met Ile Phe Asp Pro Thr Met Ser Lys Lys Lys Lys Lys Lys Lys
20 25 30

Lys Pro Phe Met Leu Asp Glu Glu Gly Asp Thr Gln Thr Glu Glu Thr
35 40 45

Gln Pro Ser Glu Thr Lys Glu Val Glu Pro Glu Pro Thr Glu Asp Lys
50 55 60

Asp Leu Glu Ala Asp Glu Glu Asp Thr Arg Lys Lys Asp Ala Ser Asp
65 70 75 80

Asp Leu Asp Asp Leu Asn Phe Phe Asn Gln Lys Lys Lys Lys Lys Lys
85 90 95

Thr Lys Lys Ile Phe Asp Ile Asp Glu Ala Glu Glu Gly Val Lys Asp
100 105 110

Leu Lys Ile Glu Ser Asp Val Gln Glu Pro Thr Glu Pro Glu Asp Asp
115 120 125

Leu Asp Ile Met Leu Gly Asn Lys Lys Lys Lys Lys Lys Asn Val Lys
130 135 140

Phe Pro Asp Glu Asp Glu Ile Leu Glu Lys Asp Glu Ala Leu Glu Asp
145 150 155 160

Glu Asp Asn Lys Lys Asp Asp Gly Ile Ser Phe Ser Asn Gln Thr Gly
165 170 175

Pro Ala Trp Ala Gly Ser Glu Arg Asp Tyr Thr Tyr Glu Glu Leu Leu
180 185 190

Asn Arg Val Phe Asn Ile Met Arg Glu Lys Asn Pro Asp Met Val Ala
195 200 205

Gly Glu Lys Arg Lys Phe Val Met Lys Pro Pro Gln Val Val Arg Val
210 215 220

Gly Thr Lys Lys Thr Ser Phe Val Asn Phe Thr Asp Ile Cys Lys Leu
225 230 235 240

Leu His Arg Gln Pro Lys His Leu Leu Ala Phe Leu Leu Ala Glu Leu
245 250 255

Gly Thr Ser Gly Ser Ile Asp Gly Asn Asn Gln Leu Val Ile Lys Gly
260 265 270

Arg Phe Gln Gln Lys Gln Ile Glu Asn Val Leu Arg Arg Tyr Ile Lys
275 280 285

Glu Tyr Val Thr Cys His Thr Cys Arg Ser Pro Asp Thr Ile Leu Gln
290 295 300

Lys Asp Thr Arg Leu Tyr Phe Leu Gln Cys Glu Thr Cys His Ser Arg
305 310 315 320

Cys Ser Val Ala Ser Ile Lys Thr Gly Phe Gln Ala Val Thr Gly Lys
325 330 335

Arg Ala Gln Leu Arg Ala Lys Ala Asn
340 345

<210> 921
<211> 34
<212> PRT
<213> Homo sapiens

<400> 921
Pro Val Gln Arg Lys Ile Glu Ala Arg Ser Ala Glu Asp Ser Phe Thr
1 5 10 15

Gly Phe Val Arg Thr Leu Tyr Phe Ala Asp Thr Tyr Leu Lys Glu Cys
20 25 30

Gln Gly

<210> 922
<211> 215
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (52)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 922
Trp Ile Pro Ala Gln Asp Ser His Val Pro Pro Gly Leu Ser Met Ala
1 5 10 15

Leu Ser Trp Val Leu Thr Val Leu Ser Leu Leu Pro Leu Leu Glu Ala
20 25 30

Gln Ile Pro Leu Cys Ala Asn Leu Val Pro Val Pro Ile Thr Asn Ala
35 40 45

Thr Leu Asp Xaa Ile Thr Gly Lys Trp Phe Tyr Ile Ala Ser Ala Phe
50 55 60

Arg Asn Glu Glu Tyr Asn Lys Ser Val Gln Glu Ile Gln Ala Thr Phe
65 70 75 80

Phe Tyr Phe Thr Pro Asn Lys Thr Glu Asp Thr Ile Phe Leu Arg Glu
85 90 95

Tyr Gln Thr Arg Gln Asp Gln Cys Ile Tyr Asn Thr Thr Tyr Leu Asn
100 105 110

Val Gln Arg Glu Asn Gly Thr Ile Ser Arg Tyr Val Gly Gly Gln Glu
115 120 125

His Phe Ala His Leu Leu Ile Leu Arg Asp Thr Lys Thr Tyr Met Leu
130 135 140

Ala Phe Asp Val Asn Asp Glu Lys Asn Trp Gly Leu Ser Val Tyr Ala
145 150 155 160

Asp Lys Pro Glu Thr Thr Lys Glu Gln Leu Gly Glu Phe Tyr Glu Ala
165 170 175

Leu Asp Cys Leu Arg Ile Pro Lys Ser Asp Val Val Tyr Thr Asp Trp
180 185 190

Lys Lys Asp Lys Cys Glu Pro Leu Glu Lys Gln His Glu Lys Glu Arg
195 200 205

Lys Gln Glu Glu Gly Glu Ser
210 215

<210> 923
<211> 358
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (19)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (25)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 923
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Cys Ala Met Pro Ile Gly Cys Pro Xaa Ser Ser Leu Gly Asn Ser Ala
  1               5                  10                  15

Arg Leu Xaa Gln Lys Gln Gln Gln Xaa Ala Gly Arg Glu Thr Ser Thr
             20                  25                  30

Cys Ser Leu Arg Ile Ile Ser Ala Pro Thr Met Ala Thr Phe Val Glu
         35                  40                  45

Leu Ser Thr Lys Ala Lys Met Pro Ile Val Gly Leu Gly Thr Trp Lys
     50                  55                  60

Ser Pro Leu Gly Lys Val Lys Glu Ala Val Lys Val Ala Ile Asp Ala
 65                  70                  75                  80

Gly Tyr Arg His Ile Asp Cys Ala Tyr Val Tyr Gln Asn Glu His Glu
                 85                  90                  95

Val Gly Glu Ala Ile Gln Glu Lys Ile Gln Glu Lys Ala Val Lys Arg
            100                 105                 110

Glu Asp Leu Phe Ile Val Ser Lys Leu Trp Pro Thr Phe Phe Glu Arg
        115                 120                 125

Pro Leu Val Arg Lys Ala Phe Glu Lys Thr Leu Lys Asp Leu Lys Leu
    130                 135                 140

Ser Tyr Leu Asp Val Tyr Leu Ile His Trp Pro Gln Gly Phe Lys Ser
145                 150                 155                 160

Gly Asp Asp Leu Phe Pro Lys Asp Asp Lys Gly Asn Ala Ile Gly Gly
                165                 170                 175

Lys Ala Thr Phe Leu Asp Ala Trp Glu Ala Met Glu Glu Leu Val Asp
```

180 185 190

Glu Gly Leu Val Lys Ala Leu Gly Val Ser Asn Phe Ser His Phe Gln
195 200 205

Ile Glu Lys Leu Leu Asn Lys Pro Gly Leu Lys Tyr Lys Pro Val Thr
210 215 220

Asn Gln Val Glu Cys His Pro Tyr Leu Thr Gln Glu Lys Leu Ile Gln
225 230 235 240

Tyr Cys His Ser Lys Gly Ile Thr Val Thr Ala Tyr Ser Pro Leu Gly
245 250 255

Ser Pro Asp Arg Pro Trp Ala Lys Pro Glu Asp Pro Ser Leu Leu Glu
260 265 270

Asp Pro Lys Ile Lys Glu Ile Ala Ala Lys His Lys Lys Thr Ala Ala
275 280 285

Gln Val Leu Ile Arg Phe His Ile Gln Arg Asn Val Ile Val Ile Pro
290 295 300

Lys Ser Val Thr Pro Ala Arg Ile Val Glu Asn Ile Gln Val Phe Asp
305 310 315 320

Phe Lys Leu Ser Asp Glu Glu Met Ala Thr Ile Leu Ser Phe Asn Arg
325 330 335

Asn Trp Arg Ala Cys Asn Val Leu Gln Ser Ser His Leu Glu Asp Tyr
340 345 350

Pro Phe Asp Ala Glu Tyr
355

<210> 924
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 924
Asn Xaa Ala Ser Met Pro Ser Pro Gln Arg Ala Ser Thr Arg Val Met
1 5 10 15

Leu Ser Gly Asn Val Arg Cys Ser Cys His Arg Gly Pro Pro Pro Gly
20 25 30

Lys Cys Leu Val Ser Ser Gly Ser Arg Pro Gln Glu Arg Val Pro Cys
35 40 45

Gly Ala Leu Gly Ala Gly Pro Asp His His Gln Asp Ser Ser Leu Gly
50 55 60

Asp Arg Val Asn Ala Ile Ser Lys Asn Lys Asn
65 70 75

<210> 925
<211> 252
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (50)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (54)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (226)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (227)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (229)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (249)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 925
Ala Thr Ala Asp Lys Glu Xaa Pro Gly Lys His Gln Lys Gly Asp Glu
1   5   10   15

Val Ala Gly Ala Gly Arg Phe Ser Glu Arg Leu Pro Glu Cys Gly Arg
            20   25   30

Ala Ala Val Thr His Gln Trp Leu Ser Gln Tyr Pro Arg Ser Ser Arg
        35   40   45

Gly Xaa His Ala His Xaa Val Asn Pro Pro Tyr Tyr Ile Pro Leu Val
    50   55   60

Glu Leu Val Pro His Pro Glu Thr Ala Pro Thr Thr Val Asp Arg Thr
65   70   75   80

His Ala Leu Met Lys Lys Ile Gly Gln Cys Pro Met Arg Val Gln Lys
                85   90   95

Glu Val Ala Gly Phe Val Leu Asn Arg Leu Gln Tyr Ala Ile Ile Ser
            100   105   110

Glu Ala Trp Arg Leu Val Glu Glu Gly Ile Val Ser Pro Ser Asp Leu
        115   120   125

Asp Leu Val Met Ser Glu Gly Leu Gly Met Arg Tyr Ala Phe Ile Gly
    130   135   140

Pro Leu Glu Thr Met His Leu Asn Ala Glu Gly Met Leu Ser Tyr Cys
145   150   155   160

Asp Arg Tyr Ser Glu Gly Ile Lys His Val Leu Gln Thr Phe Gly Pro
                165   170   175

Ile Pro Glu Phe Ser Arg Ala Thr Ala Glu Lys Val Asn Gln Asp Met
            180   185   190

Cys Met Lys Val Pro Asp Asp Pro Glu His Leu Ala Ala Arg Arg Gln
        195   200   205

Trp Arg Asp Glu Cys Leu Met Arg Leu Ala Lys Leu Lys Ser Gln Val
    210   215   220

Gln Xaa Xaa Trp Xaa Phe Pro Pro Phe Leu Phe Ser Leu Ile Ala Phe
225   230   235   240

Asp Tyr Ile Leu Gln Pro Val Ile Xaa Val Ser Trp
                245   250

<210> 926
<211> 220
<212> PRT
<213> Homo sapiens

<400> 926
Arg Pro Pro Leu Ser Trp Ser Ala Gly Pro Ser Leu Ala Ala Pro Ala
1 5 10 15

Ala Met Ser Ser Glu Met Glu Pro Leu Leu Trp Ala Trp Ser Tyr Phe
20 25 30

Arg Arg Arg Lys Phe Gln Leu Trp Pro Ile Tyr Ala Arg Arg Cys Trp
35 40 45

Arg Ser Pro Leu Met Thr Arg Arg Leu Leu Gln Met Gly Ile Tyr Asn
50 55 60

Gly Gln Leu Phe Asn Asn Leu Gly Leu Cys Cys Phe Tyr Ala Gln Gln
65 70 75 80

Tyr Asp Met Thr Leu Thr Ser Phe Glu Arg Ala Leu Ser Leu Ala Glu
85 90 95

Asn Glu Glu Glu Ala Ala Asp Val Trp Tyr Asn Leu Gly His Val Ala
100 105 110

Val Gly Ile Gly Asp Thr Asn Leu Ala His Gln Cys Phe Arg Leu Ala
115 120 125

Leu Val Asn Asn Asn Asn His Ala Glu Ala Tyr Asn Asn Leu Ala Val
130 135 140

Leu Glu Met Arg Lys Gly His Val Glu Gln Ala Arg Ala Leu Leu Gln
145 150 155 160

Thr Ala Ser Ser Leu Ala Pro His Met Tyr Glu Pro His Phe Asn Phe
165 170 175

Ala Thr Ile Ser Asp Lys Ile Gly Asp Leu Gln Arg Ser Tyr Val Ala
180 185 190

Ala Gln Lys Ser Glu Ala Ala Phe Pro Asp His Val Asp Thr Gln His
195 200 205

Leu Ile Lys Gln Leu Arg Gln His Phe Ala Met Leu
210 215 220

<210> 927
<211> 105
<212> PRT
<213> Homo sapiens

<400> 927
Ser Ser Trp Met Ser Ile Ser Ala Tyr Cys His Pro Ile Glu Thr Leu
1 5 10 15

Val Asp Ile Phe Gln Glu Tyr Pro Asp Glu Ile Glu Tyr Ile Phe Lys
20 25 30

Pro Ser Cys Val Pro Leu Met Arg Cys Gly Gly Cys Cys Asn Asp Glu
35 40 45

Gly Leu Glu Cys Val Pro Thr Glu Glu Ser Asn Ile Thr Met Gln Ile
50 55 60

Met Arg Ile Lys Pro His Gln Gly Gln His Ile Gly Glu Met Ser Phe
65 70 75 80

Leu Gln His Asn Lys Cys Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg
85 90 95

Gln Glu Lys Cys Asp Lys Pro Arg Arg
100 105

<210> 928
<211> 87
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (10)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (36)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (47)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 928
Ser Ser Leu Gly Lys Leu Asp His Gln Xaa Phe Ser Leu Asp Arg Val
1 5 10 15

Ser Leu Val Asn Lys Gly Asp Thr Gly Asn Pro Glu Trp Thr Val Ile
20 25 30

Cys Val Gly Xaa His Ser Gly Ser Gly Ala Ser Asp Thr Leu Xaa Pro
35 40 45

Lys Thr Ala Pro Ser Phe Arg Leu Ala Tyr Glu Met Met Phe Met Cys
50 55 60

Phe Leu Glu Thr Arg Trp Lys Glu Arg Gly Arg Ile Asn Phe Leu Ile
65 70 75 80

Leu Leu Leu Leu Asn Val Met
85

<210> 929
<211> 263
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (252)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (257)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 929
Ala Arg Ile Gly His Cys Val Glu Pro Pro Gly Ala Glu Ile Arg Met
1 5 10 15

Phe Arg Phe Met Arg Asp Val Glu Pro Glu Asp Pro Met Phe Leu Met
20 25 30

Asp Pro Phe Ala Ile His Arg Gln His Met Ser Arg Met Leu Ser Gly
35 40 45

Gly Phe Gly Tyr Ser Pro Phe Leu Ser Ile Thr Asp Gly Asn Met Pro
50 55 60

Gly Thr Arg Pro Ala Ser Arg Arg Met Gln Gln Ala Gly Ala Val Ser
65 70 75 80

Pro Phe Gly Met Leu Gly Met Ser Gly Gly Phe Met Asp Met Phe Gly
85 90 95

Met Met Asn Asp Met Ile Gly Asn Met Glu His Met Thr Ala Gly Gly
100 105 110

Asn Cys Gln Thr Phe Ser Ser Ser Thr Val Ile Ser Tyr Ser Asn Thr
115 120 125

Gly Asp Gly Ala Pro Lys Val Tyr Gln Glu Thr Ser Glu Met Arg Ser
130 135 140

Ala Pro Gly Gly Ile Arg Glu Thr Arg Arg Thr Val Arg Asp Ser Asp
145 150 155 160

Ser Gly Leu Glu Gln Met Ser Ile Gly His His Ile Arg Asp Arg Ala
165 170 175

His Ile Leu Gln Arg Ser Arg Asn His Arg Thr Gly Asp Gln Glu Glu
180 185 190

Arg Gln Asp Tyr Ile Asn Leu Asp Glu Ser Glu Ala Ala Ala Phe Asp
195 200 205

Asp Glu Trp Arg Arg Glu Thr Ser Arg Phe Arg Gln Gln Arg Pro Leu
210 215 220

Glu Phe Arg Arg Leu Glu Ser Ser Gly Ala Gly Gly Arg Arg Arg Arg
225 230 235 240

Gly Leu Pro Ala Trp Pro Ser Arg Asp Leu Arg Xaa Pro Leu Ser Arg
245 250 255

Xaa Ser Arg Arg Tyr Asp Trp
260

<210> 930
<211> 308
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (110)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (115)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (152)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (225)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 930

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Gly Leu Asn Pro Gly Leu Val Gly Leu Ser Val Ser Tyr Ser Leu Gln
1               5                   10                  15

Val Thr Phe Ala Leu Asn Trp Met Ile Arg Met Met Ser Asp Leu Glu
            20                  25                  30

Ser Asn Ile Val Ala Val Glu Arg Val Lys Glu Tyr Ser Lys Thr Glu
        35                  40                  45

Thr Glu Ala Pro Trp Val Val Glu Gly Ser Arg Pro Pro Glu Gly Trp
    50                  55                  60

Pro Pro Arg Gly Glu Val Glu Phe Arg Asn Tyr Ser Val Arg Tyr Arg
65                  70                  75                  80

Pro Gly Leu Asp Leu Val Leu Arg Asp Leu Ser Leu His Val His Gly
                85                  90                  95

Gly Glu Lys Val Gly Ile Val Gly Arg Thr Gly Ala Gly Xaa Ser Ser
            100                 105                 110

Met Thr Xaa Cys Leu Phe Arg Ile Leu Glu Ala Ala Lys Gly Glu Ile
        115                 120                 125

Arg Ile Asp Gly Leu Asn Val Ala Asp Ile Gly Leu His Asp Leu Arg
    130                 135                 140

Ser Gln Leu Thr Ile Ile Pro Xaa Asp Pro Ile Leu Phe Ser Gly Thr
145                 150                 155                 160

Leu Arg Met Asn Leu Asp Pro Phe Gly Ser Tyr Ser Glu Glu Asp Ile
                165                 170                 175

Trp Trp Ala Leu Glu Leu Ser His Leu His Thr Phe Val Ser Ser Gln
            180                 185                 190

Pro Ala Ala Trp Asp Phe Gln Cys Ser Glu Gly Gly Glu Asn Leu Ser
```

195 200 205

Val Gly Gln Arg Gln Leu Val Cys Leu Ala Arg Ala Leu Leu Arg Lys
210 215 220

Xaa Arg Ile Leu Val Leu Asp Glu Ala Thr Ala Ala Ile Asp Leu Glu
225 230 235 240

Thr Asp Asn Leu Ile Gln Ala Thr Ile Arg Thr Gln Phe Asp Thr Cys
245 250 255

Thr Val Leu Thr Ile Ala His Arg Leu Asn Thr Ile Met Asp Tyr Thr
260 265 270

Arg Val Leu Val Leu Asp Lys Gly Val Val Ala Glu Phe Asp Ser Pro
275 280 285

Ala Asn Leu Ile Ala Ala Arg Gly Ile Phe Tyr Gly Met Ala Arg Asp
290 295 300

Ala Gly Leu Ala
305

<210> 931
<211> 46
<212> PRT
<213> Homo sapiens

<400> 931
Arg Gly Cys Ala Leu Ser Cys Ala Asp Val Gln His Leu Leu Tyr Phe
1 5 10 15

Asn Gly Ile Val Leu Leu Asp His Tyr Arg Thr Thr Asn Cys Gln Arg
20 25 30

Val Asn Thr Asp Asp Pro Asp Leu Thr Leu Asn Pro Leu Asp
35 40 45

<210> 932
<211> 334
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (127)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (191)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (227)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (246)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 932
Glu Arg Glu Thr Ser Ser Leu Leu Leu Leu Gly Leu Ser Val Cys Ala
1 5 10 15

Thr Gly Arg Lys Ala Cys Val Arg Leu Arg Glu Trp Ala Leu Ser Arg
20 25 30

Pro Leu Thr Met Glu Glu Leu Glu Gln Gly Leu Leu Met Gln Pro Trp
35 40 45

Ala Trp Leu Gln Leu Ala Glu Asn Ser Leu Leu Ala Lys Val Phe Ile
50 55 60

Thr Lys Gln Gly Tyr Ala Leu Leu Val Ser Asp Leu Gln Gln Val Trp
65 70 75 80

His Glu Gln Val Asp Thr Ser Val Val Ser Gln Arg Ala Lys Glu Leu
85 90 95

Asn Lys Arg Leu Thr Ala Pro Pro Ala Ala Phe Leu Cys His Leu Asp
100 105 110

Asn Leu Leu Arg Pro Leu Leu Lys Asp Ala Ala His Pro Ser Xaa Ala
115 120 125

Thr Phe Ser Cys Asp Cys Val Ala Asp Ala Leu Ile Leu Arg Val Arg
130 135 140

Ser Glu Leu Ser Gly Leu Pro Phe Tyr Trp Asn Phe His Cys Met Leu
145 150 155 160

Ala Ser Pro Ser Leu Val Ser Gln His Leu Ile Arg Pro Leu Met Gly
165 170 175

Met Ser Leu Ala Leu Gln Cys Gln Val Arg Glu Leu Ala Thr Xaa Leu

180 185 190

His Met Lys Asp Leu Glu Ile Gln Asp Tyr Gln Glu Ser Gly Ala Thr
195 200 205

Leu Ile Arg Asp Arg Leu Lys Thr Glu Pro Phe Glu Glu Asn Ser Phe
210 215 220

Leu Glu Xaa Phe Met Ile Glu Lys Leu Pro Glu Ala Cys Ser Ile Gly
225 230 235 240

Asp Gly Lys Pro Phe Xaa Met Asn Leu Gln Asp Leu Tyr Met Ala Val
245 250 255

Thr Thr Gln Glu Val Gln Val Gly Gln Lys His Gln Gly Ala Gly Asp
260 265 270

Pro His Thr Ser Asn Ser Ala Ser Leu Gln Gly Ile Asp Ser Gln Cys
275 280 285

Val Asn Gln Pro Glu Gln Leu Val Ser Ser Ala Pro Thr Leu Ser Ala
290 295 300

Pro Glu Lys Glu Ser Thr Gly Thr Ser Gly Pro Leu Gln Arg Pro Gln
305 310 315 320

Leu Ser Lys Val Lys Arg Lys Lys Pro Arg Gly Leu Phe Ser
325 330

<210> 933
<211> 89
<212> PRT
<213> Homo sapiens

<400> 933
Pro Ser Cys Gln Arg Pro Lys Ser Val Ser Trp Cys His Val His Thr
1 5 10 15

Pro Cys His Phe Thr Leu His Leu Ser Pro Ser Phe Pro Met His Ala
20 25 30

Tyr Ser Glu His Pro Cys Val Gly Pro Ser Ser Ala Ser Arg Ala Cys
35 40 45

Ser Ala Val Gly Leu Phe Cys Gly Arg Lys Glu Ala Val Ser Ala Phe
50 55 60

Ser Asp Gly Thr Gly Val Glu Gly Arg Ser Cys Ile Val Ala Leu Leu
65 70 75 80

Asn Ser Pro Phe Cys Ser Ile Leu Val
85

<210> 934
<211> 314
<212> PRT
<213> Homo sapiens

<400> 934
Asp Pro Tyr Ser Gln Ser Ala Thr Ala Phe Asn Glu Met Ile Gln Glu
1 5 10 15

Asn Gly Tyr Asn Phe Asp Arg Ser Ser Ser Thr Phe Ser Gly Ile Lys
20 25 30

Glu Leu Ala Arg Arg Phe Ala Leu Thr Phe Gly Leu Asp Gln Leu Lys
35 40 45

Thr Arg Glu Ala Ile Ala Met Leu His Lys Asp Gly Ile Glu Phe Ala
50 55 60

Phe Lys Glu Pro Asn Pro Gln Gly Glu Ser His Pro Pro Leu Asn Leu
65 70 75 80

Ala Phe Leu Asp Ile Leu Ser Glu Phe Ser Ser Lys Leu Leu Arg Gln
85 90 95

Asp Lys Arg Thr Val Tyr Val Tyr Leu Glu Lys Phe Met Thr Phe Gln
100 105 110

Met Ser Leu Arg Arg Glu Asp Val Trp Leu Pro Leu Met Ser Tyr Arg
115 120 125

Asn Ser Leu Leu Ala Gly Gly Asp Asp Asp Thr Met Ser Val Ile Ser
130 135 140

Gly Ile Ser Ser Arg Gly Ser Thr Val Arg Ser Lys Lys Ser Lys Pro
145 150 155 160

Ser Thr Gly Lys Arg Lys Val Val Glu Gly Met Gln Leu Ser Leu Thr
165 170 175

Glu Glu Ser Ser Ser Ser Asp Ser Met Trp Leu Ser Arg Glu Gln Thr
180 185 190

Leu His Thr Pro Val Met Met Gln Thr Pro Gln Leu Thr Ser Thr Ile
195 200 205

Met Arg Glu Pro Lys Arg Leu Arg Pro Glu Asp Ser Phe Met Ser Val
210 215 220

Tyr Pro Met Gln Thr Glu His His Gln Thr Pro Leu Asp Tyr Asn Arg
225 230 235 240

Arg Gly Thr Ser Leu Met Glu Asp Asp Glu Glu Pro Ile Val Glu Asp
245 250 255

Val Met Met Ser Ser Glu Gly Arg Ile Glu Asp Leu Asn Glu Gly Met
260 265 270

Asp Phe Asp Thr Met Asp Ile Asp Leu Pro Pro Ser Lys Asn Arg Arg
275 280 285

Glu Arg Thr Glu Leu Lys Pro Asp Phe Phe Asp Pro Ala Ser Ile Met
290 295 300

Asp Glu Ser Val Leu Gly Val Ser Met Phe
305 310

<210> 935
<211> 109
<212> PRT
<213> Homo sapiens

<400> 935
Thr His Leu Ile Lys Glu Asn Ile Phe Pro Ala Arg Lys Val Tyr Ser
1 5 10 15

Phe Ser Phe Lys Leu Ser His Leu Glu Gly Ser Cys Glu Leu Ala Tyr
20 25 30

Leu Gln Val Val Lys Val Pro Phe Ser Val Leu Phe Cys Phe Val Leu
35 40 45

Phe Phe Ser Phe Thr Gln Pro Asn Val Lys Val Val Asn Leu Gly Lys
50 55 60

Ser Leu Val Met Lys Cys Glu Ser Cys Tyr Gln Ile Tyr Phe Ser Asp
65 70 75 80

Val Ser Phe Leu Ile Leu Val Ala Asn Lys Thr Leu Thr Phe Ser Arg
85 90 95

Phe Ile Asp Glu Val Lys Ser Leu Val Cys Cys Glu Leu
100 105

<210> 936
<211> 82
<212> PRT
<213> Homo sapiens

<400> 936
Phe Gly Leu Phe Cys Thr Leu Tyr Lys Trp Thr His Ile Met Phe Ile
1 5 10 15

Phe Trp Val Cys Leu Leu Ser Phe Asn Ile Arg Phe Val Gly Ser Ser
20 25 30

Leu Leu Cys Val Val Leu Ser Cys Ser Leu Tyr Ser Val Pro Lys Tyr
35 40 45

Ser Ile Leu Gln Phe Thr His Ser Thr Leu Asp Ser Lys Cys Phe His
50 55 60

Ile Trp Ala Ile Thr Asn Ser Ala Ala Val Asn Ile His Ile His Ile
65 70 75 80

Phe Trp

<210> 937
<211> 237
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (79)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (85)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 937
Phe Gln Leu Tyr Glu Lys Phe Leu His Arg Tyr Lys Met Ile Ser Glu
1 5 10 15

Phe Thr Trp Pro Asn His Asp Leu Pro Ser Asp Lys Glu Ala Val Lys
20 25 30

Lys Leu Ile Glu Arg Cys Gly Phe Gln Asp Asp Val Ala Tyr Gly Lys
35 40 45

Thr Lys Ile Phe Ile Arg Thr Pro Arg Thr Leu Phe Thr Leu Glu Glu
50 55 60

Leu Arg Ala Gln Met Leu Ile Arg Ile Val Leu Phe Leu Gln Xaa Val
65 70 75 80

Trp Arg Gly Thr Xaa Ala Arg Met Arg Tyr Lys Arg Thr Lys Ala Ala
85 90 95

Leu Thr Ile Ile Arg Tyr Tyr Arg Arg Tyr Lys Val Lys Ser Tyr Ile
100 105 110

His Glu Val Ala Arg Arg Phe His Gly Val Lys Thr Met Arg Asp Tyr
115 120 125

Gly Lys His Val Lys Trp Pro Ser Pro Pro Lys Val Leu Arg Arg Phe
130 135 140

Glu Glu Ala Leu Gln Thr Ile Phe Asn Arg Trp Arg Ala Ser Gln Leu
145 150 155 160

Ile Lys Ser Ile Pro Ala Ser Asp Leu Pro Gln Val Arg Ala Lys Val
165 170 175

Ala Ala Val Glu Met Leu Lys Gly Gln Arg Ala Asp Leu Gly Leu Gln
180 185 190

Arg Ala Trp Glu Gly Asn Tyr Leu Ala Ser Lys Pro Asp Thr Pro Gln
195 200 205

Thr Ser Gly Thr Phe Val Pro Val Ala Asn Glu Leu Lys Arg Lys Asp
210 215 220

Lys Tyr Met Asn Val Leu Phe Ser Cys His Val Arg Lys
225 230 235

<210> 938
<211> 752
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (748)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 938
Ala Cys Trp Pro Ala Gly Leu Ser Arg His Ala Arg Pro Leu Ser Asn

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1               5                   10                  15
Lys Met Leu Gln Gln Val Pro Glu Asn Ile Asn Phe Pro Ala Glu Glu
                20                  25                  30
Glu Lys Ile Leu Glu Phe Trp Thr Glu Phe Asn Cys Phe Gln Glu Cys
            35                  40                  45
Leu Lys Gln Ser Lys His Lys Pro Lys Phe Thr Phe Tyr Asp Gly Pro
    50                  55                  60
Pro Phe Ala Thr Gly Leu Pro His Tyr Gly His Ile Leu Ala Gly Thr
65                  70                  75                  80
Ile Lys Asp Ile Val Thr Arg Tyr Ala His Gln Ser Gly Phe His Val
                85                  90                  95
Asp Arg Arg Phe Gly Trp Asp Cys His Gly Leu Pro Val Glu Tyr Glu
            100                 105                 110
Ile Asp Lys Thr Leu Gly Ile Arg Gly Pro Glu Asp Val Ala Lys Met
        115                 120                 125
Gly Ile Thr Glu Tyr Asn Asn Gln Cys Arg Ala Ile Val Met Arg Tyr
    130                 135                 140
Ser Ala Glu Trp Lys Ser Thr Val Ser Arg Leu Gly Arg Trp Ile Asp
145                 150                 155                 160
Phe Asp Asn Asp Tyr Lys Thr Leu Tyr Pro Gln Phe Met Glu Ser Val
                165                 170                 175
Trp Trp Val Phe Lys Gln Leu Tyr Asp Lys Gly Leu Val Tyr Arg Gly
            180                 185                 190
Val Lys Val Met Pro Phe Ser Thr Ala Cys Asn Thr Pro Leu Ser Asn
        195                 200                 205
Phe Glu Ser His Gln Asn Tyr Lys Asp Val Gln Asp Pro Ser Val Phe
    210                 215                 220
Val Thr Phe Pro Leu Glu Glu Asp Glu Thr Val Ser Leu Val Ala Trp
225                 230                 235                 240
Thr Thr Thr Pro Trp Thr Leu Pro Ser Asn Leu Ala Val Cys Val Asn
                245                 250                 255
Pro Glu Met Gln Tyr Val Lys Ile Lys Asp Val Ala Arg Gly Arg Leu
            260                 265                 270
Leu Ile Leu Met Glu Ala Arg Leu Ser Ala Leu Tyr Lys Leu Glu Ser
```

275 280 285

Asp Tyr Glu Ile Leu Glu Arg Phe Pro Gly Ala Tyr Leu Lys Gly Lys
290 295 300

Lys Tyr Arg Pro Leu Phe Asp Tyr Phe Leu Lys Cys Lys Glu Asn Gly
305 310 315 320

Ala Phe Thr Val Leu Val Asp Asn Tyr Val Lys Glu Glu Glu Gly Thr
325 330 335

Gly Val Val His Gln Ala Pro Tyr Phe Gly Ala Glu Asp Tyr Arg Val
340 345 350

Cys Met Asp Phe Asn Ile Ile Arg Lys Asp Ser Leu Pro Val Cys Pro
355 360 365

Val Asp Ala Ser Gly Cys Phe Thr Thr Glu Val Thr Asp Phe Ala Gly
370 375 380

Gln Tyr Val Lys Asp Ala Asp Lys Ser Ile Ile Arg Thr Leu Lys Glu
385 390 395 400

Gln Gly Arg Leu Leu Val Ala Thr Thr Phe Thr His Ser Tyr Pro Phe
405 410 415

Cys Trp Arg Ser Asp Thr Pro Leu Ile Tyr Lys Ala Val Pro Ser Trp
420 425 430

Phe Val Arg Val Glu Asn Met Val Asp Gln Leu Leu Arg Asn Asn Asp
435 440 445

Leu Cys Tyr Trp Val Pro Glu Leu Val Arg Glu Lys Arg Phe Gly Asn
450 455 460

Trp Leu Lys Asp Ala Arg Asp Trp Thr Ile Ser Arg Asn Arg Tyr Trp
465 470 475 480

Gly Thr Pro Ile Pro Leu Trp Val Ser Asp Asp Phe Glu Glu Val Val
485 490 495

Cys Ile Gly Ser Val Ala Glu Leu Glu Glu Leu Ser Gly Ala Lys Ile
500 505 510

Ser Asp Leu His Arg Glu Ser Val Asp His Leu Thr Ile Pro Ser Arg
515 520 525

Cys Gly Lys Gly Ser Leu His Arg Ile Ser Glu Val Phe Asp Cys Trp
530 535 540

Phe Glu Ser Gly Ser Met Pro Tyr Ala Gln Val His Tyr Pro Phe Glu

545 550 555 560

Asn Lys Arg Glu Phe Glu Asp Ala Phe Pro Ala Asp Phe Ile Ala Glu
565 570 575

Gly Ile Asp Gln Thr Arg Gly Trp Phe Tyr Thr Leu Leu Val Leu Ala
580 585 590

Thr Ala Leu Phe Gly Gln Pro Pro Phe Lys Asn Val Ile Val Asn Gly
595 600 605

Leu Val Leu Ala Ser Asp Gly Gln Lys Met Ser Lys Arg Lys Lys Asn
610 615 620

Tyr Pro Asp Pro Val Ser Ile Ile Gln Lys Tyr Gly Ala Asp Ala Leu
625 630 635 640

Arg Leu Tyr Leu Ile Asn Ser Pro Val Val Arg Ala Glu Asn Leu Arg
645 650 655

Phe Lys Glu Glu Gly Val Arg Asp Val Leu Lys Asp Val Leu Leu Pro
660 665 670

Trp Tyr Asn Ala Tyr Arg Phe Leu Ile Gln Asn Val Leu Arg Leu Gln
675 680 685

Lys Glu Glu Glu Ile Glu Phe Leu Tyr Asn Glu Asn Thr Val Arg Glu
690 695 700

Ser Pro Asn Ile Thr Asp Arg Trp Ile Leu Ser Phe Met Gln Ser Leu
705 710 715 720

Ile Gly Phe Phe Glu Thr Glu Met Ala Gly Glu Ser Leu Leu Val Cys
725 730 735

Pro Pro Arg Asn Lys Asp Tyr Ser Leu Cys Asn Xaa Pro Phe Asp Ile
740 745 750

<210> 939
<211> 104
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (75)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 939
Met Arg Arg Val Ile Leu His Ser Pro Leu Met Ser Gly Leu Arg Val
1 5 10 15

Ala Phe Pro Asp Thr Arg Lys Thr Tyr Cys Phe Asp Ala Phe Pro Ser
20 25 30

Ile Asp Lys Ile Ser Lys Val Thr Ser Pro Val Leu Val Ile His Gly
35 40 45

Thr Glu Asp Glu Val Ile Asp Phe Ser His Gly Leu Ala Met Tyr Glu
50 55 60

Arg Cys Pro Arg Ala Val Glu Pro Leu Trp Xaa Glu Gly Ala Gly His
65 70 75 80

Asn Asp Ile Glu Leu Tyr Ala Gln Tyr Leu Glu Arg Leu Lys Gln Phe
85 90 95

Ile Ser His Glu Leu Pro Asn Ser
100

<210> 940
<211> 557
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (19)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (25)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (53)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (248)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (273)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (323)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 940

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Gly Glu Gly Gly Gly Xaa Arg Arg Gly Arg Pro Ala Ala Gly Arg Pro
  1               5                  10                  15

Arg Arg Xaa Arg Thr Ala Gly Arg Xaa Gly Gly Thr Gly Ala Pro Ala
             20                  25                  30

Gly Ala Ser Ala His Arg Asp Ala Gly Leu Leu Arg Glu Arg Pro Ala
         35                  40                  45

Ala Gly Glu Ala Xaa Gly Arg Thr Glu Leu Ser Leu Leu Arg Phe Leu
     50                  55                  60

Ser Ala Glu Leu Thr Arg Gly Tyr Phe Leu Glu His Asn Glu Ala Lys
 65                  70                  75                  80

Tyr Thr Glu Arg Arg Glu Arg Val Tyr Thr Cys Leu Arg Ile Pro Arg
                 85                  90                  95

Glu Leu Glu Lys Leu Met Val Phe Gly Ile Phe Leu Cys Leu Asp Ala
            100                 105                 110

Phe Leu Tyr Val Phe Thr Leu Leu Pro Leu Arg Val Phe Leu Ala Leu
        115                 120                 125

Phe Arg Leu Leu Thr Leu Pro Cys Tyr Gly Leu Arg Asp Arg Arg Leu
    130                 135                 140

Leu Gln Pro Ala Gln Val Cys Asp Ile Leu Lys Gly Val Ile Leu Val
145                 150                 155                 160

Ile Cys Tyr Phe Met Met His Tyr Val Asp Tyr Ser Met Met Tyr His
                165                 170                 175

Leu Ile Arg Gly Gln Ser Val Ile Lys Leu Tyr Ile Ile Tyr Asn Met
            180                 185                 190
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B4 (cont'd)

Leu Glu Val Ala Asp Arg Leu Phe Ser Ser Phe Gly Gln Asp Ile Leu
195 200 205

Asp Ala Leu Tyr Trp Thr Ala Thr Glu Pro Lys Glu Arg Lys Arg Ala
210 215 220

His Ile Gly Val Ile Pro His Phe Phe Met Ala Val Leu Tyr Val Phe
225 230 235 240

Leu His Ala Ile Leu Ile Met Xaa Gln Ala Thr Thr Leu Asn Val Ala
245 250 255

Phe Asn Ser His Asn Lys Ser Leu Ser Thr Ile Met Met Ser Asn Asn
260 265 270

Xaa Val Glu Ile Lys Gly Ser Val Phe Lys Lys Phe Glu Lys Asn Asn
275 280 285

Leu Phe Gln Met Ser Asn Ser Asp Ile Lys Glu Arg Phe Thr Asn Tyr
290 295 300

Val Leu Leu Leu Ile Val Cys Leu Arg Asn Met Glu Gln Phe Ser Trp
305 310 315 320

Asn Pro Xaa His Leu Trp Val Leu Phe Pro Asp Val Cys Met Val Ile
325 330 335

Ala Ser Glu Ile Ala Val Asp Ile Val Lys His Ala Phe Ile Thr Lys
340 345 350

Phe Asn Asp Ile Thr Ala Asp Val Tyr Ser Glu Tyr Arg Ala Ser Leu
355 360 365

Ala Phe Asp Leu Val Ser Ser Arg Gln Lys Asn Ala Tyr Thr Asp Tyr
370 375 380

Ser Asp Ser Val Ala Arg Arg Met Gly Phe Ile Pro Leu Pro Leu Ala
385 390 395 400

Val Leu Leu Ile Arg Val Val Thr Ser Ser Ile Lys Val Gln Gly Ile
405 410 415

Leu Ser Tyr Ala Cys Val Ile Leu Phe Tyr Phe Gly Leu Ile Ser Leu
420 425 430

Lys Val Leu Asn Ser Ile Val Leu Leu Gly Lys Ser Cys Gln Tyr Val
435 440 445

Lys Glu Ala Lys Met Glu Glu Lys Leu Ser Asn Pro Pro Ala Thr Cys
450 455 460

Thr Pro Gly Lys Pro Ser Ser Lys Ser Gln Asn Lys Cys Lys Pro Ser
465 470 475 480

Gln Gly Leu Ser Thr Glu Glu Asn Leu Ser Ala Ser Ile Thr Lys Gln
485 490 495

Pro Ile His Gln Lys Glu Asn Ile Ile Pro Leu Leu Val Thr Ser Asn
500 505 510

Ser Asp Gln Phe Leu Thr Thr Pro Asp Gly Asp Glu Lys Asp Ile Thr
515 520 525

Gln Asp Asn Ser Glu Leu Lys His Arg Ser Ser Lys Lys Asp Leu Leu
530 535 540

Glu Ile Asp Arg Phe Thr Ile Cys Gly Asn Arg Ile Asp
545 550 555

<210> 941
<211> 707
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (265)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (271)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (307)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 941
Pro Thr Arg Pro Val Leu Pro Val Ser Arg Cys Ser Gly Ala Phe Gln
1 5 10 15

Pro Ser Val Ser Arg Arg Ser Gln Ala Gly Ser Ser Lys Phe Pro Thr
20 25 30

Pro Leu Gly Pro Glu Asn Ser Gly Asn Pro Thr Leu Leu Ser Ser Ala
35 40 45

Gln Pro Glu Thr Arg Val Ser Tyr Trp Thr Lys Leu Leu Ser Gln Leu
50 55 60

Leu Ala Pro Leu Pro Gly Leu Leu Gln Lys Val Leu Ile Trp Ser Gln
65 70 75 80

Leu Phe Gly Gly Met Phe Pro Thr Arg Trp Leu Asp Phe Ala Gly Val
85 90 95

Tyr Ser Ala Leu Arg Ala Leu Lys Gly Arg Glu Lys Pro Ala Ala Pro
100 105 110

Thr Ala Gln Lys Ser Leu Ser Ser Leu Gln Leu Asp Ser Ser Asp Pro
115 120 125

Ser Val Thr Ser Pro Leu Asp Trp Leu Glu Glu Gly Ile His Trp Gln
130 135 140

Tyr Ser Pro Pro Asp Leu Lys Leu Glu Leu Lys Ala Lys Gly Ser Ala
145 150 155 160

Leu Asp Pro Ala Ala Gln Ala Phe Leu Leu Glu Gln Gln Leu Trp Gly
165 170 175

Val Glu Leu Leu Pro Ser Ser Leu Gln Ser Arg Leu Tyr Ser Asn Arg
180 185 190

Glu Leu Gly Ser Ser Pro Ser Gly Leu Leu Asn Ile Gln Arg Ile Asp
195 200 205

Asn Phe Ser Val Val Ser Tyr Leu Leu Asn Pro Ser Tyr Leu Asp Cys
210 215 220

Phe Pro Arg Leu Glu Val Ser Tyr Gln Asn Ser Asp Gly Asn Ser Glu
225 230 235 240

Val Val Gly Phe Gln Thr Leu Thr Pro Glu Ser Ser Cys Leu Arg Glu
245 250 255

Asp His Cys His Pro Gln Pro Leu Xaa Ala Glu Leu Ile Pro Xaa Ser
260 265 270

Trp Gln Gly Cys Pro Pro Leu Ser Thr Glu Gly Leu Pro Glu Ile His
275 280 285

His Leu Arg Met Lys Arg Leu Glu Phe Leu Gln Gln Ala Ser Lys Gly
290 295 300

Gln Asp Xaa Pro Thr Pro Asp Gln Asp Asn Gly Tyr His Ser Leu Glu
305 310 315 320

Glu Glu His Ser Leu Leu Arg Met Asp Pro Lys His Cys Arg Asp Asn
325 330 335

Pro Thr Gln Phe Val Pro Ala Ala Gly Asp Ile Pro Gly Asn Thr Gln
340 345 350

Glu Ser Thr Glu Glu Lys Ile Glu Leu Leu Thr Thr Glu Val Pro Leu
355 360 365

Ala Leu Glu Glu Glu Ser Pro Ser Glu Gly Cys Pro Ser Ser Glu Ile
370 375 380

Pro Met Glu Lys Glu Pro Gly Glu Gly Arg Ile Ser Val Val Asp Tyr
385 390 395 400

Ser Tyr Leu Glu Gly Asp Leu Pro Ile Ser Ala Arg Pro Ala Cys Ser
405 410 415

Asn Lys Leu Ile Asp Tyr Ile Leu Gly Gly Ala Ser Ser Asp Leu Glu
420 425 430

Thr Ser Ser Asp Pro Glu Gly Glu Asp Trp Asp Glu Glu Ala Glu Asp
435 440 445

Asp Gly Phe Asp Ser Asp Ser Ser Leu Ser Asp Ser Asp Leu Glu Gln
450 455 460

Asp Pro Glu Gly Leu His Leu Trp Asn Ser Phe Cys Ser Val Asp Pro
465 470 475 480

Tyr Asn Pro Gln Asn Phe Thr Ala Thr Ile Gln Thr Ala Ala Arg Ile
485 490 495

Val Pro Glu Glu Pro Ser Asp Ser Glu Lys Asp Leu Ser Gly Lys Ser
500 505 510

Asp Leu Glu Asn Ser Ser Gln Ser Gly Ser Leu Pro Glu Thr Pro Glu
515 520 525

His Ser Ser Gly Glu Glu Asp Asp Trp Glu Ser Ser Ala Asp Glu Ala
530 535 540

Glu Ser Leu Lys Leu Trp Asn Ser Phe Cys Asn Ser Asp Asp Pro Tyr
545 550 555 560

Asn Pro Leu Asn Phe Lys Ala Pro Phe Gln Thr Ser Gly Glu Asn Glu
565 570 575

Lys Gly Cys Arg Asp Ser Lys Thr Pro Ser Glu Ser Ile Val Ala Ile
580 585 590

Ser Glu Cys His Thr Leu Leu Ser Cys Lys Val Gln Leu Leu Gly Ser
595 600 605

Gln Glu Ser Glu Cys Pro Asp Ser Val Gln Arg Asp Val Leu Ser Gly
610 615 620

Gly Arg His Thr His Val Lys Arg Lys Lys Val Thr Phe Leu Glu Glu
625 630 635 640

Val Thr Glu Tyr Tyr Ile Ser Gly Asp Glu Asp Arg Lys Gly Pro Trp
645 650 655

Glu Glu Phe Ala Arg Asp Gly Cys Arg Phe Gln Lys Arg Ile Gln Glu
660 665 670

Thr Glu Asp Ala Ile Gly Tyr Cys Leu Thr Phe Glu His Arg Glu Arg
675 680 685

Met Phe Asn Arg Leu Gln Gly Thr Cys Phe Lys Gly Leu Asn Val Leu
690 695 700

Lys Gln Cys
705

<210> 942
<211> 259
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (67)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (72)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 942
Arg Ile Thr Phe Ser Cys Ile Asn Tyr Ser Thr Gln Glu Leu Leu Arg
1 5 10 15

Phe Pro Lys Leu His Asp Ala Ile Val Glu Val Val Thr Cys Leu Leu
20 25 30

Arg Lys Arg Leu Pro Val Thr Asn Glu Met Val His Asn Leu Val Ala
35 40 45

Ile Glu Leu Ala Tyr Ile Asn Thr Lys His Pro Asp Phe Ala Asp Ala
50 55 60

Cys Gly Xaa Met Asn Asn Asn Xaa Glu Glu Gln Arg Arg Asn Arg Leu
65 70 75 80

Ala Arg Glu Leu Pro Ser Ala Val Ser Arg Asp Lys Val Ala Ser Gly
85 90 95

Gly Gly Gly Val Gly Asp Gly Val Gln Glu Pro Thr Thr Gly Asn Trp
100 105 110

Arg Gly Met Leu Lys Thr Ser Lys Ala Glu Glu Leu Leu Ala Glu Glu
115 120 125

Lys Ser Lys Pro Ile Pro Ile Met Pro Ala Ser Pro Gln Lys Gly His
130 135 140

Ala Val Asn Leu Leu Asp Val Pro Val Pro Val Ala Arg Lys Leu Ser
145 150 155 160

Ala Arg Glu Gln Arg Asp Cys Glu Val Ile Glu Arg Leu Ile Lys Ser
165 170 175

Tyr Phe Leu Ile Val Arg Lys Asn Ile Gln Asp Ser Val Pro Lys Ala
180 185 190

Val Met His Phe Leu Val Asn His Val Lys Asp Thr Leu Gln Ser Glu
195 200 205

Leu Val Gly Gln Leu Tyr Lys Ser Ser Leu Leu Asp Asp Leu Leu Thr
210 215 220

Glu Ser Glu Asp Met Ala Gln Arg Arg Lys Glu Ala Ala Asp Met Leu
225 230 235 240

Lys Ala Leu Gln Gly Ala Ser Gln Ile Ile Ala Glu Ile Arg Glu Thr
245 250 255

His Leu Trp

<210> 943
<211> 369
<212> PRT
<213> Homo sapiens

<220>
<221> SITE

<222> (185)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 943
Arg Cys Arg Gly Gly Arg Lys Met Glu Leu Gly Ser Cys Leu Glu Gly
1   5   10   15

Gly Arg Glu Ala Ala Glu Glu Glu Gly Glu Pro Glu Val Lys Lys Arg
            20   25   30

Arg Leu Leu Cys Val Glu Phe Ala Ser Val Ala Ser Cys Asp Ala Ala
        35   40   45

Val Ala Gln Cys Phe Leu Ala Glu Asn Asp Trp Glu Met Glu Arg Ala
    50   55   60

Leu Asn Ser Tyr Phe Glu Pro Pro Val Glu Glu Ser Ala Leu Glu Arg
65   70   75   80

Arg Pro Glu Thr Ile Ser Glu Pro Lys Thr Tyr Val Asp Leu Thr Asn
                85   90   95

Glu Glu Thr Thr Asp Ser Thr Thr Ser Lys Ile Ser Pro Ser Glu Asp
            100   105   110

Thr Gln Gln Glu Asn Gly Ser Met Phe Ser Leu Ile Thr Trp Asn Ile
        115   120   125

Asp Gly Leu Asp Leu Asn Asn Leu Ser Glu Arg Ala Arg Gly Val Cys
    130   135   140

Ser Tyr Leu Ala Leu Tyr Ser Pro Asp Val Ile Phe Leu Gln Glu Val
145   150   155   160

Ile Pro Pro Tyr Tyr Ser Tyr Leu Lys Lys Arg Ser Ser Asn Tyr Glu
                165   170   175

Ile Ile Thr Gly His Glu Glu Gly Xaa Phe Thr Ala Ile Met Leu Lys
            180   185   190

Lys Ser Arg Val Lys Leu Lys Ser Gln Glu Ile Ile Pro Phe Pro Ser
        195   200   205

Thr Lys Met Met Arg Asn Leu Leu Cys Val His Val Asn Val Ser Gly
    210   215   220

Asn Glu Leu Cys Leu Met Thr Ser His Leu Glu Ser Thr Arg Gly His
225   230   235   240

Ala Ala Glu Arg Met Asn Gln Leu Lys Met Val Leu Lys Lys Met Gln
                245   250   255

Glu Ala Pro Glu Ser Ala Thr Val Ile Phe Ala Gly Asp Thr Asn Leu
260 265 270

Arg Asp Arg Glu Val Thr Arg Cys Gly Gly Leu Pro Asn Asn Ile Val
275 280 285

Asp Val Trp Glu Phe Leu Gly Lys Pro Lys His Cys Gln Tyr Thr Trp
290 295 300

Asp Thr Gln Met Asn Ser Asn Leu Gly Ile Thr Ala Ala Cys Lys Leu
305 310 315 320

Arg Phe Asp Arg Ile Phe Phe Arg Ala Ala Ala Glu Glu Gly His Ile
325 330 335

Ile Pro Arg Ser Leu Asp Leu Leu Gly Leu Glu Lys Leu Asp Cys Gly
340 345 350

Arg Phe Pro Ser Asp His Trp Gly Leu Leu Cys Asn Leu Asp Ile Ile
355 360 365

Leu

<210> 944
<211> 158
<212> PRT
<213> Homo sapiens

<400> 944
Tyr Ile Gln Phe Met Val Ser Tyr Asn Pro Thr Pro Arg Leu Asp Val
1 5 10 15

Ser Ser Pro Asn Glu Ala Gly Arg Pro Glu Trp Glu Val His Val Ser
20 25 30

Tyr His Ser Ser Phe Tyr Val Gly Gly Cys Ser Ala Ala Arg Arg Val
35 40 45

Met Gly Val Asn Pro Tyr Ile Leu Lys Lys Asn Met Ile Leu Met Thr
50 55 60

Asn His Phe Tyr Ala Ala Ile Leu Gly Tyr Asp Glu Gly Ile Leu Ser
65 70 75 80

Asp Asp His Gly Leu Ala Ala Ala Leu Trp Arg Thr Phe Phe Asn Arg
85 90 95

Lys Cys Glu Asp Pro Arg His Leu Glu Leu Leu Val Glu Tyr Val Arg
100 105 110

Lys Gln Ile Gln Tyr Leu Asp Ser Met Asn Gly Glu Asp Leu Leu Leu
115 120 125

Thr Gly Glu Val Ser Trp Arg Pro Leu Val Glu Lys Asn Pro Gln Ser
130 135 140

Ile Leu Lys Pro His Ser Pro Thr Tyr Asn Asp Glu Gly Leu
145 150 155

<210> 945
<211> 294
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 945
Lys Leu Val Pro Ala Arg Pro Xaa Asp Thr Gln Cys Arg Arg Pro Ser
1 5 10 15

Arg Arg Arg Gln Ile Gly Ala Asp Ser Cys Pro Ala Pro Thr Ala Ser
20 25 30

Ala Thr Met Ser His His Trp Gly Tyr Gly Lys His Asn Gly Pro Glu
35 40 45

His Trp His Lys Asp Phe Pro Ile Ala Lys Gly Glu Arg Gln Ser Pro
50 55 60

Val Asp Ile Asp Thr His Thr Ala Lys Tyr Asp Pro Ser Leu Lys Pro
65 70 75 80

Leu Ser Val Ser Tyr Asp Gln Ala Thr Ser Leu Arg Ile Leu Asn Asn
85 90 95

Gly His Ala Phe Asn Val Glu Phe Asp Asp Ser Gln Asp Lys Ala Val
100 105 110

Leu Lys Gly Gly Pro Leu Asp Gly Thr Tyr Arg Leu Ile Gln Phe His
115 120 125

Phe His Trp Gly Ser Leu Asp Gly Gln Gly Ser Glu His Thr Val Asp
130 135 140

Lys Lys Lys Tyr Ala Ala Glu Leu His Leu Val His Trp Asn Thr Lys
145 150 155 160

Tyr Gly Asp Phe Gly Lys Ala Val Gln Gln Pro Asp Gly Leu Ala Val
165 170 175

Leu Gly Ile Phe Leu Lys Val Gly Ser Ala Lys Pro Gly Leu Gln Lys
180 185 190

Val Val Asp Val Leu Asp Ser Ile Lys Thr Lys Gly Lys Ser Ala Asp
195 200 205

Phe Thr Asn Phe Asp Pro Arg Gly Leu Leu Pro Glu Ser Leu Asp Tyr
210 215 220

Trp Thr Tyr Pro Gly Ser Leu Thr Thr Pro Pro Leu Leu Glu Cys Val
225 230 235 240

Thr Trp Ile Val Leu Lys Glu Pro Ile Ser Val Ser Ser Glu Gln Val
245 250 255

Leu Lys Phe Arg Lys Leu Asn Phe Asn Gly Glu Gly Glu Pro Glu Glu
260 265 270

Leu Met Val Asp Asn Trp Arg Pro Ala Gln Pro Leu Lys Asn Arg Gln
275 280 285

Ile Lys Ala Ser Phe Lys
290

<210> 946
<211> 69
<212> PRT
<213> Homo sapiens

<400> 946
Lys Ser Ile Glu Gln Lys Gly Met His Ala Val Phe Gln Trp Leu Arg
1 5 10 15

His Ala Phe Tyr Ser Leu Thr Ser Ile His Phe Phe Thr Thr Cys Ile
20 25 30

Lys Thr Asn Asp Leu Cys Phe Cys His Arg Gln Lys Gln Val Asp Thr
35 40 45

Gly Gly Leu Ala Leu Leu Ile Asn Phe Phe Ser Ile Arg Phe Ser Leu
50 55 60

Ile Met Leu Asn Phe
65

<210> 947
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (130)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 947
Leu Xaa Lys Gly Thr Lys Leu Xaa Leu His Arg Gly Ala Asp Arg Ser
1 5 10 15

Arg Thr Ser Gly Ser Pro Gly Leu Gln Glu Phe Gly Thr Arg Ile Asn
20 25 30

Arg Ile Phe Arg Ile Cys Asn Leu Thr Arg Pro Gln Glu Gly Tyr Leu
35 40 45

Met Val Gln Gln Phe Gln Tyr Leu Gly Trp Ala Ser His Arg Glu Val
50 55 60

Pro Gly Ser Lys Arg Ser Phe Leu Lys Leu Ile Leu Gln Val Glu Lys
65 70 75 80

Trp Gln Glu Glu Cys Glu Glu Gly Glu Gly Arg Thr Ile Ile His Cys
85 90 95

Leu Asn Gly Gly Gly Arg Ser Gly Met Phe Cys Ala Ile Gly Ile Val
100 105 110

Val Glu Met Val Lys Arg Ala Lys Cys Cys Arg Cys Phe Pro Cys Ser
115 120 125

Lys Xaa Thr Glu Gly Thr Ala Ser Gln Thr Trp Trp Glu Ala Pro Glu

130 135 140

Gln Tyr Arg Phe Cys Tyr Asp Val Ala Leu Glu Tyr Leu Gly Ile Ile
145 150 155 160

Leu Val Gly

<210> 948
<211> 87
<212> PRT
<213> Homo sapiens

<400> 948
Thr Ser Leu Lys Pro Cys Arg Asn Glu Ser Leu Leu Leu Asn Glu Met
1 5 10 15

Leu Lys Pro Ile Lys Lys His Ala Val Met Pro Ser Phe Pro Phe His
20 25 30

Arg Val His Ala Ser Pro Ala Gly Glu Ser His Ala Ala Arg Gly Asn
35 40 45

Trp Leu His Ser Leu Gly Cys Cys Arg Thr Lys Arg Lys Glu Ala Ala
50 55 60

Lys Cys Leu Tyr Val Val Leu Asn Pro Arg Arg Ile Lys Cys Arg Gly
65 70 75 80

Gly Met Ala Lys Gly Gly Trp
85

<210> 949
<211> 88
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (49)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (74)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (81)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (84)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 949
Pro Arg Arg His Arg Val Pro Gly Ser Gly Phe Ala Phe Pro Lys Asn
1 5 10 15

Glu Asn Lys Leu Leu Pro Lys Glu Leu Val Phe Pro Leu Leu Phe Ser
20 25 30

Asn Cys Glu Gly Pro Arg Gly Val Glu His Gly Ala Pro His Lys Pro
35 40 45

Xaa Gly Trp Cys Pro Gly Tyr Gln Gly His Ala Xaa Gly Leu Asp Asp
50 55 60

Leu Ser Leu Gln Gly Ala Leu Val Val Xaa Asn Trp Leu Lys Val Thr
65 70 75 80

Xaa Glu Gly Xaa Cys Gly Asn Trp
85

<210> 950
<211> 77
<212> PRT
<213> Homo sapiens

<400> 950
Trp Leu Leu Cys Pro Val Arg Val Phe Ser Ser Leu Thr Trp Val His
1 5 10 15

Phe Leu Met Ala His Met Lys Phe Gly Ser Tyr Gly Leu Thr Leu Ala
20 25 30

Met Val Leu Ser Tyr Gly Glu Gln His Gln Arg Pro Val Thr Cys Lys
35 40 45

Leu Lys Ile Gln Cys Gln Gly Pro Ser Pro Ala Pro Leu Ile Glu Asn
50 55 60

Leu Leu Ala Ile Cys Ile Phe Arg Cys Ser Arg Leu Val
65 70 75

<210> 951
<211> 42
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (26)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 951
Thr Ser Gly Pro Lys Ser Ser Ala Cys Leu Ser Leu Pro Arg Cys Trp
1 5 10 15

Asp Tyr Lys Cys Glu Pro Leu Cys Thr Xaa Phe Val Leu Thr Tyr Phe
20 25 30

Glu Leu Ala Pro Tyr Ser Lys Ala Ala Ser
35 40

<210> 952
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (34)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 952
Ala Arg Lys Glu Ile Gln Tyr Cys Phe Trp Thr Leu Ile Lys Ser Cys
1 5 10 15

Ala Ile Asp Thr Tyr Met Ser His Leu Ala Val Leu Arg Arg Ala Ile
20 25 30

Ile Xaa Leu Gln Leu Thr Leu Glu Asn Ile Leu Ala Phe Glu His Phe
35 40 45

Ser Asn Asn Gln Val Asp Ser Arg Gly Ser

50 55

<210> 953
<211> 223
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (180)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (220)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 953
Arg Pro Cys Pro Glu Glu Ala Glu Ile Gly Ile Ala Met Gly Ser Gly
1 5 10 15

Thr Ala Val Ala Lys Thr Ala Ser Glu Met Val Leu Ala Asp Asp Asn
20 25 30

Phe Ser Thr Ile Val Xaa Ala Val Glu Glu Gly Arg Ala Ile Tyr Asn
35 40 45

Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn Val Gly Glu
50 55 60

Val Val Cys Ile Phe Leu Thr Ala Ala Leu Gly Leu Pro Glu Ala Leu
65 70 75 80

Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp Gly Leu Pro
85 90 95

Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile Met Asp Arg
100 105 110

Pro Pro Arg Ser Pro Lys Glu Pro Leu Ile Ser Gly Trp Leu Phe Phe
115 120 125

Arg Tyr Met Ala Ile Gly Gly Tyr Val Gly Ala Ala Thr Val Gly Ala
130 135 140

Ala Ala Trp Trp Phe Leu Tyr Ala Glu Asp Gly Pro His Val Asn Tyr
145 150 155 160

Ser Gln Leu Thr His Phe Met Gln Cys Thr Glu Asp Asn Thr His Phe
165 170 175

Glu Gly Ile Xaa Cys Glu Val Phe Glu Ala Pro Glu Pro Met Thr Met
180 185 190

Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala Leu Asn Ser
195 200 205

Leu Ser Glu Asn Gln Ser Leu Leu Arg Asn Cys Xaa Pro Trp Gly
210 215 220

<210> 954
<211> 412
<212> PRT
<213> Homo sapiens

<400> 954
His Glu Leu Met Gln Glu Ala Gly Asp Glu Cys Glu Pro Glu Trp Cys
1 5 10 15

Asp Ala Glu Asp Pro Leu Phe Ile Leu Tyr Thr Ser Gly Ser Thr Gly
20 25 30

Lys Pro Lys Gly Val Val His Thr Val Gly Gly Tyr Met Leu Tyr Val
35 40 45

Ala Thr Thr Phe Lys Tyr Val Phe Asp Phe His Ala Glu Asp Val Phe
50 55 60

Trp Cys Thr Ala Asp Ile Gly Trp Ile Thr Gly His Ser Tyr Val Thr
65 70 75 80

Tyr Gly Pro Leu Ala Asn Gly Ala Thr Ser Val Leu Phe Glu Gly Ile
85 90 95

Pro Thr Tyr Pro Asp Val Asn Arg Leu Trp Ser Ile Val Asp Lys Tyr
100 105 110

Lys Val Thr Lys Phe Tyr Thr Ala Pro Thr Ala Ile Arg Leu Leu Met
115 120 125

Lys Phe Gly Asp Glu Pro Val Thr Lys His Ser Arg Ala Ser Leu Gln
130 135 140

Val Leu Gly Thr Val Gly Glu Pro Ile Asn Pro Glu Ala Trp Leu Trp
145 150 155 160

Tyr His Arg Val Val Gly Ala Gln Arg Cys Pro Ile Val Asp Thr Phe
165 170 175

Trp Gln Thr Glu Thr Gly Gly His Met Leu Thr Pro Leu Pro Gly Ala
180 185 190

Thr Pro Met Lys Pro Gly Ser Ala Thr Phe Pro Phe Phe Gly Val Ala
195 200 205

Pro Ala Ile Leu Asn Glu Ser Gly Glu Glu Leu Glu Gly Glu Ala Glu
210 215 220

Gly Tyr Leu Val Phe Lys Gln Pro Trp Pro Gly Ile Met Arg Thr Val
225 230 235 240

Tyr Gly Asn His Glu Arg Phe Glu Thr Thr Tyr Phe Lys Lys Phe Pro
245 250 255

Gly Tyr Tyr Val Thr Gly Asp Gly Cys Gln Arg Asp Gln Asp Gly Tyr
260 265 270

Tyr Trp Ile Thr Gly Arg Ile Asp Asp Met Leu Asn Val Ser Gly His
275 280 285

Leu Leu Ser Thr Ala Glu Val Glu Ser Ala Leu Val Glu His Glu Ala
290 295 300

Val Ala Glu Ala Ala Val Val Gly His Pro His Pro Val Lys Gly Glu
305 310 315 320

Cys Leu Tyr Cys Phe Val Thr Leu Cys Asp Gly His Thr Phe Ser Pro
325 330 335

Lys Leu Thr Glu Glu Leu Lys Lys Gln Ile Arg Glu Lys Ile Gly Pro
340 345 350

Ile Ala Thr Pro Asp Tyr Ile Gln Asn Ala Pro Gly Leu Pro Lys Thr
355 360 365

Arg Ser Gly Lys Ile Met Arg Arg Val Leu Arg Lys Ile Ala Gln Asn
370 375 380

Asp His Asp Leu Gly Asp Met Ser Thr Val Ala Asp Pro Ser Val Ile
385 390 395 400

Ser His Leu Phe Ser His Arg Cys Leu Thr Ile Gln
405 410

<210> 955
<211> 150
<212> PRT
<213> Homo sapiens

<400> 955
Gly Leu Leu Arg Ala Trp Gln Leu Arg Ile Asn Ala Gly Leu Arg Leu
1 5 10 15

Ala Ala Arg Phe Leu Pro Glu Pro Leu Leu Ser Leu Val Asn His Thr
20 25 30

Gly Gln Arg Ser Asp Met Gln Lys Val Thr Leu Gly Leu Leu Val Phe
35 40 45

Leu Ala Gly Phe Pro Val Leu Asp Ala Asn Asp Leu Glu Asp Lys Asn
50 55 60

Ser Pro Phe Tyr Tyr Asp Trp His Ser Leu Gln Val Gly Gly Leu Ile
65 70 75 80

Cys Ala Gly Val Leu Cys Ala Met Gly Ile Ile Ile Val Met Ser Glu
85 90 95

Trp Arg Ser Ser Gly Glu Gln Ala Gly Arg Gly Trp Gly Ser Pro Pro
100 105 110

Leu Thr Thr Gln Leu Ser Pro Thr Gly Ala Lys Cys Lys Cys Lys Phe
115 120 125

Gly Gln Lys Ser Gly His His Pro Gly Glu Thr Pro Pro Leu Ile Thr
130 135 140

Pro Gly Ser Ala Gln Ser
145 150

<210> 956
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 956

Val Asp Pro Arg Val Xaa Pro Arg Ser Gly Gly Glu Lys Pro Gly Gly
1 5 10 15

Leu Gly Ala Pro Ala Gly Ile Gly Ser Arg Leu Gly Cys Glu Arg Phe
20 25 30

Ser Arg Ser Arg Glu Ile Leu Gln Ala Ile Thr Met Ser Thr Asp Thr
35 40 45

Gly Val Ser Leu Pro Ser Tyr Glu Glu Asp Gln Gly Ser Lys Leu Ile
50 55 60

Arg Lys Ala Lys Glu Ala Pro Phe Val Pro Val Gly Ile Ala Gly Phe
65 70 75 80

Ala Ala Ile Val Ala Tyr Gly Leu Tyr Lys Leu Lys Ser Arg Gly Asn
85 90 95

Thr Lys Met Ser Ile His Leu Ile His Met Arg Val Ala Ala Gln Gly
100 105 110

Phe Val Val Gly Ala Met Thr Val Gly Met Gly Tyr Ser Met Tyr Arg
115 120 125

Glu Phe Trp Ala Lys Pro Lys Pro
130 135

<210> 957
<211> 461
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (103)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (135)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (241)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 957

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Ile Glu Thr Ser Asn Lys Asn Asp Met Thr Ile Asp Ile Leu His Ala
 1               5                  10                  15

Asp Gly Glu Arg Pro Asn Val Leu Glu Asn Leu Asp Asn Ser Lys Glu
            20                  25                  30

Lys Thr Val Gly Ser Glu Ala Ala Lys Thr Glu Asp Thr Val Leu Cys
        35                  40                  45

Ser Ser Asp Thr Asp Glu Glu Cys Leu Ile Ile Xaa Thr Glu Cys Lys
    50                  55                  60

Asn Asn Ser Asp Gly Lys Thr Ala Val Val Gly Ser Asn Leu Ser Ser
65                  70                  75                  80

Arg Pro Ala Ser Pro Asn Ser Ser Ser Gly Gln Ala Ser Val Gly Asn
                85                  90                  95

Gln Thr Asn Thr Ala Cys Xaa Pro Glu Glu Ser Cys Val Leu Lys Lys
            100                 105                 110

Pro Ile Lys Arg Val Tyr Lys Lys Phe Asp Pro Val Gly Glu Ile Leu
        115                 120                 125

Lys Met Gln Asp Glu Leu Xaa Lys Pro Ile Ser Arg Lys Val Pro Glu
    130                 135                 140

Leu Pro Leu Met Asn Leu Glu Asn Ser Lys Gln Pro Ser Val Ser Glu
145                 150                 155                 160

Gln Leu Ser Gly Pro Ser Asp Ser Ser Ser Trp Pro Lys Ser Gly Trp
                165                 170                 175

Pro Ser Ala Phe Gln Lys Pro Lys Gly Arg Leu Pro Tyr Glu Leu Gln
            180                 185                 190

Asp Tyr Val Glu Asp Thr Ser Glu Tyr Leu Ala Pro Gln Glu Gly Asn
        195                 200                 205

Phe Val Tyr Lys Leu Phe Ser Leu Gln Asp Leu Leu Leu Leu Val Arg
    210                 215                 220

Cys Ser Val Gln Arg Ile Glu Thr Arg Pro Arg Ser Lys Lys Arg Lys
225                 230                 235                 240

Xaa Ile Arg Arg Gln Phe Pro Val Tyr Val Leu Pro Lys Val Glu Tyr
                245                 250                 255
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Gln Ala Cys Tyr Gly Val Glu Ala Leu Thr Glu Ser Glu Leu Cys Arg
            260                 265                 270

Leu Trp Thr Glu Ser Leu Leu His Ser Asn Ser Ser Phe Tyr Val Gly
        275                 280                 285

His Ile Asp Ala Phe Thr Ser Lys Leu Phe Leu Leu Glu Glu Ile Thr
    290                 295                 300

Ser Glu Glu Leu Lys Glu Lys Leu Ser Ala Leu Lys Ile Ser Asn Leu
305                 310                 315                 320

Phe Asn Ile Leu Gln His Ile Leu Lys Lys Leu Ser Ser Leu Gln Glu
                325                 330                 335

Gly Ser Tyr Leu Leu Ser His Ala Ala Glu Asp Ser Ser Leu Leu Ile
            340                 345                 350

Tyr Lys Ala Ser Asp Gly Lys Val Thr Arg Thr Ala Tyr Asn Leu Tyr
        355                 360                 365

Lys Thr His Cys Gly Leu Pro Gly Val Pro Ser Ser Leu Ser Val Pro
    370                 375                 380

Trp Val Pro Leu Asp Pro Ser Leu Leu Leu Pro Tyr His Ile His His
385                 390                 395                 400

Gly Arg Ile Pro Cys Thr Phe Pro Pro Lys Ser Leu Asp Thr Thr Thr
                405                 410                 415

Gln Gln Lys Ile Gly Gly Thr Arg Met Pro Thr Arg Ser His Arg Asn
            420                 425                 430

Pro Val Ser Met Glu Thr Lys Ser Ser Cys Leu Pro Ala Gln Gln Val
        435                 440                 445

Glu Thr Glu Gly Val Ala Pro His Lys Arg Lys Ile Thr
    450                 455                 460
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<210> 958
<211> 248
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 958

Asp Trp Gly Ala Thr Gln Xaa Arg Arg Ser Arg Asp Arg Arg Trp Gly
1 5 10 15

Pro Arg Asn Leu Ser Leu Asp Ile Gly Thr Glu Val Phe Ala Pro Gly
20 25 30

Pro Gly Ser Gly Ile Gln Lys Gln Arg Glu Pro Arg Lys Gly Arg Leu
35 40 45

Ile Val Cys Gly His Gly Thr Leu Glu Arg Asp Gly Val Phe Cys Leu
50 55 60

Leu Ser Asp Asp His Gly Ala Ser Trp Arg Tyr Gly Ser Gly Val Ser
65 70 75 80

Gly Ile Pro Tyr Gly Gln Pro Lys Gln Glu Asn Asp Phe Asn Pro Asp
85 90 95

Glu Cys Gln Pro Tyr Glu Leu Pro Asp Gly Ser Val Val Ile Asn Ala
100 105 110

Arg Asn Gln Asn Asn Tyr His Cys His Cys Arg Ile Val Leu Arg Ser
115 120 125

Tyr Asp Ala Cys Asp Thr Leu Arg Pro Arg Asp Val Thr Phe Asp Pro
130 135 140

Glu Leu Val Asp Pro Val Val Ala Ala Gly Ala Val Val Thr Ser Ser
145 150 155 160

Gly Ile Val Phe Phe Ser Asn Pro Ala His Pro Glu Phe Arg Val Asn
165 170 175

Leu Thr Leu Arg Trp Ser Phe Ser Asn Gly Thr Ser Trp Arg Lys Glu
180 185 190

Thr Val Gln Leu Trp Pro Gly Pro Ser Gly Tyr Ser Ser Leu Ala Thr
195 200 205

Leu Glu Gly Ser Met Asp Gly Glu Glu Gln Ala Pro Gln Leu Tyr Val
210 215 220

Leu Tyr Glu Lys Gly Arg Asn His Tyr Thr Glu Ser Ile Ser Val Ala
225 230 235 240

Lys Ile Ser Val Tyr Gly Thr Leu
245

<210> 959
<211> 105
<212> PRT
<213> Homo sapiens

<400> 959
Ile Arg His Glu Gly Ala Gly Pro Ser Gln Leu Arg Leu His Tyr Pro
1 5 10 15

Arg Ile Ser Met Ala Val Arg Gln Trp Val Ile Ala Leu Ala Leu Ala
20 25 30

Ala Leu Leu Val Val Asp Arg Glu Val Pro Val Ala Ala Gly Lys Leu
35 40 45

Pro Phe Ser Arg Met Pro Ile Cys Glu His Met Val Glu Ser Pro Thr
50 55 60

Cys Ser Gln Met Ser Asn Leu Val Cys Gly Thr Asp Gly Leu Thr Tyr
65 70 75 80

Thr Asn Glu Cys Gln Leu Cys Leu Ala Arg Ile Lys Thr Lys Gln Asp
85 90 95

Ile Gln Ile Met Lys Asp Gly Lys Cys
100 105

<210> 960
<211> 237
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (68)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (166)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (177)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE
<222> (187)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (223)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 960

```
Leu Gly Trp Ser Leu Arg Gly Gly His Trp His Gly Thr His Pro Glu
  1               5                  10                  15

Ala Ser Pro Gly Cys Pro Gly Gly Ala Ala Ser Ser Pro Ala Gly Trp
             20                  25                  30

Trp Thr Arg Ser Val Arg Ser Trp Gly Ser Ser Phe Thr Ser Glu Asp
         35                  40                  45

Cys Ser Thr Thr Met Leu Gly Ile Trp Thr Leu Leu Pro Leu Val Leu
     50                  55                  60

Thr Ser Val Xaa Arg Leu Ser Ser Lys Ser Val Asn Ala Gln Val Thr
 65                  70                  75                  80

Asp Ile Asn Ser Lys Gly Leu Glu Leu Arg Lys Thr Val Thr Thr Val
                 85                  90                  95

Glu Thr Gln Asn Leu Glu Gly Leu His His Asp Gly Gln Phe Cys His
            100                 105                 110

Lys Pro Cys Pro Pro Gly Glu Arg Lys Ala Arg Asp Cys Thr Val Asn
        115                 120                 125

Gly Asp Glu Pro Asp Cys Val Pro Cys Gln Glu Gly Lys Glu Tyr Thr
    130                 135                 140

Asp Lys Ala His Phe Ser Ser Lys Cys Arg Arg Cys Arg Leu Cys Asp
145                 150                 155                 160

Glu Gly His Gly Leu Xaa Val Glu Ile Asn Cys Thr Arg Thr Gln Asn
                165                 170                 175

Xaa Lys Cys Arg Cys Lys Pro Asn Phe Phe Xaa Asn Ser Thr Val Cys
            180                 185                 190

Glu His Cys Asp Pro Cys Thr Lys Cys Glu His Gly Ile Ile Lys Glu
        195                 200                 205

Cys Thr Leu Thr Ser Asn Thr Lys Cys Lys Glu Glu Gly Ser Xaa Ser
    210                 215                 220
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Asn Leu Gly Trp Leu Trp Leu Leu Leu Leu Pro Ile Pro
225 230 235

<210> 961
<211> 132
<212> PRT
<213> Homo sapiens

<400> 961
Gln Pro Met Ser Ser Thr Trp Val Thr Asn His Ser Glu Ile Leu Asn
1 5 10 15

Thr Tyr Pro Leu Gly Ala Gly Gly Gly Asn Asp Val Gln Tyr Leu Lys
20 25 30

Gln Asn Leu Thr Trp Thr Glu Arg Leu Tyr Phe Pro Leu Leu His Glu
35 40 45

Ser Leu Ile Ile Leu Gly Gly Leu Leu Cys Ile Pro Pro Phe Leu Leu
50 55 60

Ser Pro Pro Leu Pro Phe Val Phe Ser Lys Glu Ser Glu Leu Arg Phe
65 70 75 80

Pro Cys Ser Pro Ala Thr Leu Ile Ser Lys Thr Cys Leu Cys Val Arg
85 90 95

Phe Phe Thr Gly Asn Met Thr Phe Cys Phe Cys Ile Gly Phe Thr Val
100 105 110

Ile Gln Phe Ser Ser Leu Ile Ser Ser Lys Thr Lys Ser Glu Cys Thr
115 120 125

Arg Phe Phe Arg
130

<210> 962
<211> 613
<212> PRT
<213> Homo sapiens

<400> 962
Ala Val Ala Asn Met Ser Gly Trp Glu Ser Tyr Tyr Lys Thr Glu Gly
1 5 10 15

Asp Glu Glu Ala Glu Glu Glu Gln Glu Glu Asn Leu Glu Ala Ser Gly

20 25 30

Asp Tyr Lys Tyr Ser Gly Arg Asp Ser Leu Ile Phe Leu Val Asp Ala
35 40 45

Ser Lys Ala Met Phe Glu Ser Gln Ser Glu Asp Glu Leu Thr Pro Phe
50 55 60

Asp Met Ser Ile Gln Cys Ile Gln Ser Val Tyr Ile Ser Lys Ile Ile
65 70 75 80

Ser Ser Asp Arg Asp Leu Leu Ala Val Val Phe Tyr Gly Thr Glu Lys
85 90 95

Asp Lys Asn Ser Val Asn Phe Lys Asn Ile Tyr Val Leu Gln Glu Leu
100 105 110

Asp Asn Pro Gly Ala Lys Arg Ile Leu Glu Leu Asp Gln Phe Lys Gly
115 120 125

Gln Gln Gly Gln Lys Arg Phe Gln Asp Met Met Gly His Gly Ser Asp
130 135 140

Tyr Ser Leu Ser Glu Val Leu Trp Val Cys Ala Asn Leu Phe Ser Asp
145 150 155 160

Val Gln Phe Lys Met Ser His Lys Arg Ile Met Leu Phe Thr Asn Glu
165 170 175

Asp Asn Pro His Gly Asn Asp Ser Ala Lys Ala Ser Arg Ala Arg Thr
180 185 190

Lys Ala Gly Asp Leu Arg Asp Thr Gly Ile Phe Leu Asp Leu Met His
195 200 205

Leu Lys Lys Pro Gly Gly Phe Asp Ile Ser Leu Phe Tyr Arg Asp Ile
210 215 220

Ile Ser Ile Ala Glu Asp Glu Asp Leu Arg Val His Phe Glu Glu Ser
225 230 235 240

Ser Lys Leu Glu Asp Leu Leu Arg Lys Val Arg Ala Lys Glu Thr Arg
245 250 255

Lys Arg Ala Leu Ser Arg Leu Lys Leu Lys Leu Asn Lys Asp Ile Val
260 265 270

Ile Ser Val Gly Ile Tyr Asn Leu Val Gln Lys Ala Leu Lys Pro Pro
275 280 285

Pro Ile Lys Leu Tyr Arg Glu Thr Asn Glu Pro Val Lys Thr Lys Thr

290 295 300

Arg Thr Phe Asn Thr Ser Thr Gly Gly Leu Leu Leu Pro Ser Asp Thr
305 310 315 320

Lys Arg Ser Gln Ile Tyr Gly Ser Arg Gln Ile Ile Leu Glu Lys Glu
325 330 335

Glu Thr Glu Glu Leu Lys Arg Phe Asp Asp Pro Gly Leu Met Leu Met
340 345 350

Gly Phe Lys Pro Leu Val Leu Leu Lys Lys His His Tyr Leu Arg Pro
355 360 365

Ser Leu Phe Val Tyr Pro Glu Glu Ser Leu Val Ile Gly Ser Ser Thr
370 375 380

Leu Phe Ser Ala Leu Leu Ile Lys Cys Leu Glu Lys Glu Val Ala Ala
385 390 395 400

Leu Cys Arg Tyr Thr Pro Arg Arg Asn Ile Pro Pro Tyr Phe Val Ala
405 410 415

Leu Val Pro Gln Glu Glu Glu Leu Asp Asp Gln Lys Ile Gln Val Thr
420 425 430

Pro Pro Gly Phe Gln Leu Val Phe Leu Pro Phe Ala Asp Asp Lys Arg
435 440 445

Lys Met Pro Phe Thr Glu Lys Ile Met Ala Thr Pro Glu Gln Val Gly
450 455 460

Lys Met Lys Ala Ile Val Glu Lys Leu Arg Phe Thr Tyr Arg Ser Asp
465 470 475 480

Ser Phe Glu Asn Pro Val Leu Gln Gln His Phe Arg Asn Leu Glu Ala
485 490 495

Leu Ala Leu Asp Leu Met Glu Pro Glu Gln Ala Val Asp Leu Thr Leu
500 505 510

Pro Lys Val Glu Ala Met Asn Lys Arg Leu Gly Ser Leu Val Asp Glu
515 520 525

Phe Lys Glu Leu Val Tyr Pro Pro Asp Tyr Asn Pro Glu Gly Lys Val
530 535 540

Thr Lys Arg Lys His Asp Asn Glu Gly Ser Gly Ser Lys Arg Pro Lys
545 550 555 560

Val Glu Tyr Ser Glu Glu Glu Leu Lys Thr His Ile Ser Lys Gly Thr

565 570 575

Leu Gly Lys Phe Thr Val Pro Met Leu Lys Glu Ala Cys Arg Ala Tyr
580 585 590

Gly Leu Lys Ser Gly Leu Lys Lys Gln Glu Leu Leu Glu Ala Leu Thr
595 600 605

Lys His Phe Gln Asp
610

<210> 963
<211> 352
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (281)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 963
Arg Val Gln Glu Glu Asn Ala Arg Leu Lys Lys Lys Lys Glu Gln Leu
1 5 10 15

Gln Gln Glu Ile Glu Asp Trp Ser Lys Leu His Ala Glu Leu Ser Glu
20 25 30

Gln Ile Lys Ser Phe Glu Lys Ser Gln Lys Asp Leu Glu Val Ala Leu
35 40 45

Thr His Lys Asp Asp Asn Ile Asn Ala Leu Thr Asn Cys Ile Thr Gln
50 55 60

Leu Asn Leu Leu Glu Cys Glu Ser Glu Ser Glu Gly Gln Asn Lys Gly
65 70 75 80

Gly Asn Asp Ser Asp Glu Leu Ala Asn Gly Glu Val Gly Gly Asp Arg
85 90 95

Asn Glu Lys Met Lys Asn Gln Ile Lys Gln Met Met Asp Val Ser Arg
100 105 110

Thr Gln Thr Ala Ile Ser Val Val Glu Glu Asp Leu Lys Leu Leu Gln
115 120 125

Leu Lys Leu Arg Ala Ser Val Ser Thr Lys Cys Asn Leu Glu Asp Gln
130 135 140

Val Lys Lys Leu Glu Asp Asp Arg Asn Ser Leu Gln Ala Ala Lys Ala
145 150 155 160

Gly Leu Glu Asp Glu Cys Lys Thr Leu Arg Gln Lys Val Glu Ile Leu
165 170 175

Asn Glu Leu Tyr Gln Gln Lys Glu Met Ala Leu Gln Lys Lys Leu Ser
180 185 190

Gln Glu Glu Tyr Glu Arg Gln Glu Arg Glu His Arg Leu Ser Ala Ala
195 200 205

Asp Glu Lys Ala Val Ser Ala Ala Glu Glu Val Lys Thr Tyr Lys Arg
210 215 220

Arg Ile Glu Glu Met Glu Asp Glu Leu Gln Lys Thr Glu Arg Ser Phe
225 230 235 240

Lys Asn Gln Ile Ala Thr His Glu Lys Lys Ala His Glu Asn Trp Leu
245 250 255

Lys Ala Arg Ala Ala Glu Arg Ala Ile Ala Glu Glu Lys Arg Glu Ala
260 265 270

Ala Asn Leu Arg His Lys Leu Leu Xaa Leu Thr Gln Lys Met Ala Met
275 280 285

Leu Gln Glu Glu Pro Val Ile Val Lys Pro Met Pro Gly Lys Pro Asn
290 295 300

Thr Gln Asn Pro Pro Arg Arg Gly Pro Leu Ser Gln Asn Val Phe Trp
305 310 315 320

Pro Ile Pro Cys Glu Trp Trp Arg Met Leu Pro Ser Ile Asp Ser Gly
325 330 335

Ala Thr Arg Glu Thr Ser Leu Cys Tyr Ser Gln Ser Lys Arg Tyr Ala
340 345 350

<210> 964
<211> 553
<212> PRT
<213> Homo sapiens

<220>
<221> SITE

<222> (133)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (375)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (438)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (549)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 964
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Thr Leu Glu Ala Glu Lys Glu Arg Arg Lys Ser Gly Leu Ser Ser Arg
  1               5                  10                  15

Val Gln Phe Arg Asn Gln Gly Ser Glu Pro Lys Tyr Thr Gln Glu Leu
             20                  25                  30

Thr Leu Lys Arg Gln Lys Gln Lys Val Cys Met Glu Glu Thr Leu Trp
         35                  40                  45

Leu Gln Asp Asn Ile Arg Asp Lys Leu Arg Pro Ile Pro Ile Thr Ala
     50                  55                  60

Ser Val Glu Ile Gln Glu Pro Ser Ser Arg Arg Arg Val Asn Ser Leu
 65                  70                  75                  80

Pro Glu Val Leu Pro Ile Leu Asn Ser Asp Glu Pro Lys Thr Ala His
                 85                  90                  95

Ile Asp Val His Phe Leu Lys Glu Gly Cys Gly Asp Asp Asn Val Cys
            100                 105                 110

Asn Ser Asn Leu Lys Leu Glu Tyr Lys Phe Cys Thr Arg Glu Gly Asn
        115                 120                 125

Gln Asp Lys Phe Xaa Tyr Leu Pro Ile Gln Lys Gly Val Pro Glu Leu
    130                 135                 140

Val Leu Lys Asp Gln Lys Asp Ile Ala Leu Glu Ile Thr Val Thr Asn
145                 150                 155                 160

Ser Pro Ser Asn Pro Arg Asn Pro Thr Lys Asp Gly Asp Asp Ala His
                165                 170                 175
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Glu Ala Lys Leu Ile Ala Thr Phe Pro Asp Thr Leu Thr Tyr Ser Ala
180 185 190

Tyr Arg Glu Leu Arg Ala Phe Pro Glu Lys Gln Leu Ser Cys Val Ala
195 200 205

Asn Gln Asn Gly Ser Gln Ala Asp Cys Glu Leu Gly Asn Pro Phe Lys
210 215 220

Arg Asn Ser Asn Val Thr Phe Tyr Leu Val Leu Ser Thr Thr Glu Val
225 230 235 240

Thr Phe Asp Thr Pro Asp Leu Asp Ile Asn Leu Lys Leu Glu Thr Thr
245 250 255

Ser Asn Gln Asp Asn Leu Ala Pro Ile Thr Ala Lys Ala Lys Val Val
260 265 270

Ile Glu Leu Leu Leu Ser Val Ser Gly Val Ala Lys Pro Ser Gln Val
275 280 285

Tyr Phe Gly Gly Thr Val Val Gly Glu Gln Ala Met Lys Ser Glu Asp
290 295 300

Glu Val Gly Ser Leu Ile Glu Tyr Glu Phe Arg Val Ile Asn Leu Gly
305 310 315 320

Lys Pro Leu Thr Asn Leu Gly Thr Ala Thr Leu Asn Ile Gln Trp Pro
325 330 335

Lys Glu Ile Ser Asn Gly Lys Trp Leu Leu Tyr Leu Val Lys Val Glu
340 345 350

Ser Lys Gly Leu Glu Lys Val Thr Cys Glu Pro Gln Lys Glu Ile Asn
355 360 365

Ser Leu Asn Leu Thr Glu Xaa His Asn Ser Arg Lys Lys Arg Glu Ile
370 375 380

Thr Glu Lys Gln Ile Asp Asp Asn Arg Lys Phe Ser Leu Phe Ala Glu
385 390 395 400

Arg Lys Tyr Gln Thr Leu Asn Cys Ser Val Asn Val Asn Cys Val Asn
405 410 415

Ile Arg Cys Pro Leu Arg Gly Leu Asp Ser Lys Ala Ser Leu Ile Leu
420 425 430

Arg Ser Arg Leu Trp Xaa Ser Thr Phe Leu Glu Glu Tyr Ser Lys Leu
435 440 445

Asn Tyr Leu Asp Ile Leu Met Arg Ala Phe Ile Asp Val Thr Ala Ala
450 455 460

Ala Glu Asn Ile Arg Leu Pro Asn Ala Gly Thr Gln Val Arg Val Thr
465 470 475 480

Val Phe Pro Ser Lys Thr Val Ala Gln Tyr Ser Gly Val Pro Trp Trp
485 490 495

Ile Ile Leu Val Ala Ile Leu Ala Gly Ile Leu Met Leu Ala Leu Leu
500 505 510

Val Phe Ile Leu Trp Lys Cys Gly Phe Phe Lys Arg Asn Lys Lys Asp
515 520 525

His Tyr Asp Ala Thr Tyr His Lys Ala Glu Ile His Ala Gln Pro Ser
530 535 540

Asp Lys Glu Arg Xaa Thr Ser Asp Ala
545 550

<210> 965
<211> 220
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (70)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (217)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 965
Gln Tyr Gly Arg Ile Pro Gly Ser Thr His Ala Ser Ala Glu Pro Leu
1 5 10 15

Glu Asn Pro Phe Lys Lys Met Lys Asn Asn Ile Val Asp Ala Ala Asn
20 25 30

Asn His Ser Ala Pro Glu Val Leu Tyr Gly Ser Leu Leu Asn Gln Glu
35 40 45

Glu Leu Lys Phe Ser Arg Asn Asp Leu Glu Phe Lys Tyr Pro Ala Gly
50 55 60

His Gly Ser Ala Ser Xaa Ser Glu His Arg Ser Trp Ala Arg Glu Ser
65 70 75 80

Lys Ser Phe Asn Val Leu Lys Gln Leu Leu Leu Ser Glu Asn Cys Val
85 90 95

Arg Asp Leu Ser Pro His Arg Ser Asn Ser Val Ala Asp Ser Lys Lys
100 105 110

Lys Gly His Lys Asn Asn Val Thr Asn Ser Lys Pro Glu Phe Ser Ile
115 120 125

Ser Ser Leu Asn Gly Leu Met Tyr Ser Ser Thr Gln Pro Ser Ser Cys
130 135 140

Met Asp Asn Arg Thr Phe Ser Tyr Pro Gly Val Val Lys Thr Pro Val
145 150 155 160

Ser Pro Thr Phe Pro Glu His Leu Gly Cys Ala Gly Ser Arg Pro Glu
165 170 175

Ser Gly Leu Leu Asn Gly Cys Ser Met Pro Ser Glu Lys Gly Pro Ile
180 185 190

Lys Trp Val Ile Thr Asp Ala Glu Lys Met Ser Met Lys Ser Leu Ser
195 200 205

Arg Leu Thr Lys Pro Pro His Thr Xaa Leu His Ala
210 215 220

<210> 966
<211> 385
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (221)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 966
Trp Ile Pro Arg Ala Ala Gly Phe Gly Thr Arg Pro Leu Pro Gly Ala
1 5 10 15

Ala Gly Gly Ala Ala Gly Cys Thr Gln Arg Arg Ser Arg Glu Leu Ala
20 25 30

Ala Ala Ala Met Ser His Gln Thr Gly Ile Gln Ala Ser Glu Asp Val

35 40 45

Lys Glu Ile Phe Ala Arg Ala Arg Asn Gly Lys Tyr Arg Leu Leu Lys
50 55 60

Ile Ser Ile Glu Asn Glu Gln Leu Val Ile Gly Ser Tyr Ser Gln Pro
65 70 75 80

Ser Asp Ser Trp Asp Lys Asp Tyr Asp Ser Phe Val Leu Pro Leu Leu
85 90 95

Glu Asp Lys Gln Pro Cys Tyr Ile Leu Phe Arg Leu Asp Ser Gln Asn
100 105 110

Ala Gln Gly Tyr Glu Trp Ile Phe Ile Ala Trp Ser Pro Asp His Ser
115 120 125

His Val Arg Gln Lys Met Leu Tyr Ala Ala Thr Arg Ala Thr Leu Lys
130 135 140

Lys Glu Phe Gly Gly Gly His Ile Lys Asp Glu Val Phe Gly Thr Val
145 150 155 160

Lys Glu Asp Val Ser Leu His Gly Tyr Lys Lys Tyr Leu Leu Ser Gln
165 170 175

Ser Ser Pro Ala Pro Leu Thr Ala Ala Glu Glu Glu Leu Arg Gln Ile
180 185 190

Lys Ile Asn Glu Val Gln Thr Asp Val Gly Val Asp Thr Lys His Gln
195 200 205

Thr Leu Gln Gly Val Ala Phe Pro Ile Ser Arg Glu Xaa Phe Gln Ala
210 215 220

Leu Glu Lys Leu Asn Asn Arg Gln Leu Asn Tyr Val Gln Leu Glu Ile
225 230 235 240

Asp Ile Lys Asn Glu Ile Ile Ile Leu Ala Asn Thr Thr Asn Thr Glu
245 250 255

Leu Lys Asp Leu Pro Lys Arg Ile Pro Lys Asp Ser Ala Arg Tyr His
260 265 270

Phe Phe Leu Tyr Lys His Ser His Glu Gly Asp Tyr Leu Glu Ser Ile
275 280 285

Val Phe Ile Tyr Ser Met Pro Gly Tyr Thr Cys Ser Ile Arg Glu Arg
290 295 300

Met Leu Tyr Ser Ser Cys Lys Ser Arg Leu Leu Glu Ile Val Glu Arg

305 310 315 320

Gln Leu Gln Met Asp Val Ile Arg Lys Ile Glu Ile Asp Asn Gly Asp
325 330 335

Glu Leu Thr Ala Asp Phe Leu Tyr Glu Glu Val His Pro Lys Gln His
340 345 350

Ala His Lys Gln Ser Phe Ala Lys Pro Lys Gly Pro Ala Gly Lys Arg
355 360 365

Gly Ile Arg Arg Leu Ile Arg Gly Pro Ala Glu Thr Glu Ala Thr Thr
370 375 380

Asp
385

<210> 967
<211> 221
<212> PRT
<213> Homo sapiens

<400> 967
Arg Lys Lys Asp Lys Ser Ser Arg Pro Pro Leu Thr Pro Ser Leu Pro
1 5 10 15

Leu Ser Leu Pro Pro Gly Glu Glu Ala Arg Gly Gly Cys Ser Ala Val
20 25 30

Gly Ala Ala Pro Pro Ser Pro Gly Arg Pro Gly Pro Pro Pro His Ala
35 40 45

Ala Pro Met His Pro Phe Tyr Thr Arg Ala Ala Thr Met Ile Gly Glu
50 55 60

Ile Ala Ala Ala Val Ser Phe Ile Ser Lys Phe Leu Arg Thr Lys Gly
65 70 75 80

Leu Thr Ser Glu Arg Gln Leu Gln Thr Phe Ser Gln Ser Leu Gln Glu
85 90 95

Leu Leu Ala Glu His Tyr Lys His His Trp Phe Pro Glu Lys Pro Cys
100 105 110

Lys Gly Ser Gly Tyr Arg Cys Ile Arg Ile Asn His Lys Met Asp Pro
115 120 125

Leu Ile Gly Gln Ala Ala Gln Arg Ile Gly Leu Ser Ser Gln Glu Leu
130 135 140

Phe Arg Leu Leu Pro Ser Glu Leu Thr Leu Trp Val Asp Pro Tyr Glu
145 150 155 160

Val Ser Tyr Arg Ile Gly Glu Asp Gly Ser Ile Cys Val Leu Tyr Glu
165 170 175

Ala Ser Pro Ala Gly Gly Ser Thr Gln Asn Ser Thr Asn Val Gln Met
180 185 190

Val Asp Ser Arg Ile Ser Cys Lys Glu Glu Leu Leu Leu Gly Arg Thr
195 200 205

Ser Pro Ser Lys Asn Tyr Asn Met Met Thr Val Ser Gly
210 215 220

<210> 968
<211> 212
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (15)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 968
Xaa Leu Thr Lys Gly Thr Lys Ala Gly Ser Ser Thr Ala Val Xaa Thr
1 5 10 15

Ala Leu Glu Leu Val Asp Pro Pro Gly Cys Arg Asn Ser Ala Glu Phe
20 25 30

Asp Leu Cys Cys Ser Pro Cys Arg Arg Arg Leu Leu Gly Arg Glu Glu
35 40 45

Ala Gly Glu Glu Pro Thr Ser Pro Val Thr Gln Tyr Leu Gln Pro Arg
50 55 60

Ser Pro Glu Glu Cys Lys Met Phe Ala Cys Ala Lys Leu Ala Cys Thr
65 70 75 80

Pro Ser Leu Ile Arg Ala Gly Ser Arg Val Ala Tyr Arg Pro Ile Ser
85 90 95

Ala Ser Val Leu Ser Arg Pro Glu Ala Ser Arg Thr Gly Glu Gly Ser
100 105 110

Thr Val Phe Asn Gly Ala Gln Asn Gly Val Ser Gln Leu Ile Gln Arg
115 120 125

Glu Phe Gln Thr Ser Ala Ile Ser Arg Asp Ile Asp Thr Ala Ala Lys
130 135 140

Phe Ile Gly Ala Gly Ala Ala Thr Val Gly Val Ala Gly Ser Gly Ala
145 150 155 160

Gly Ile Gly Thr Val Phe Gly Ser Leu Ile Ile Gly Tyr Ala Arg Asn
165 170 175

Pro Ser Leu Lys Gln Gln Leu Phe Ser Tyr Ala Ile Leu Gly Phe Ala
180 185 190

Leu Ser Glu Ala Met Gly Leu Phe Cys Leu Met Val Ala Phe Leu Ile
195 200 205

Leu Phe Ala Met
210

<210> 969
<211> 224
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (140)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (142)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (206)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (224)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 969
Tyr Leu Asp Ala Glu Lys Met Gly Gln Lys Ala Ser Gln Gln Leu Ala
1 5 10 15

Leu Lys Asp Ser Lys Glu Val Pro Val Val Cys Glu Val Val Ser Glu
20 25 30

Ala Ile Val His Ala Ala Gln Lys Leu Lys Glu Tyr Leu Gly Phe Glu
35 40 45

Tyr Pro Pro Ser Lys Leu Cys Pro Ala Ala Asn Thr Leu Asn Glu Ile
50 55 60

Phe Leu Ile His Phe Ile Thr Phe Cys Gln Glu Lys Gly Val Asp Glu
65 70 75 80

Trp Leu Thr Thr Thr Lys Met Thr Lys His Gln Ala Phe Leu Phe Gly
85 90 95

Ala Asp Trp Ile Trp Thr Phe Trp Gly Ser Asp Lys Gln Ile Lys Leu
100 105 110

Gln Leu Ala Val Gln Thr Leu Gln Met Ser Ser Pro Pro Pro Val Glu
115 120 125

Ser Lys Pro Cys Asp Leu Ser Asn Pro Glu Ser Xaa Val Xaa Glu Ser
130 135 140

Ser Trp Lys Lys Ser Arg Phe Asp Lys Leu Glu Glu Phe Cys Asn Leu
145 150 155 160

Ile Gly Glu Asp Cys Leu Gly Leu Phe Ile Ile Phe Gly Met Pro Gly
165 170 175

Lys Pro Lys Asp Ile Arg Gly Val Val Leu Asp Ser Val Lys Ser Gln
180 185 190

Met Val Arg Ser His Leu Pro Gly Gly Lys Ala Val Ala Xaa Phe Val
195 200 205

Leu Glu Thr Glu Asp Cys Val Phe Ile Lys Glu Leu Leu Lys Ile Xaa
210 215 220

<210> 970
<211> 180

<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (166)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 970
Leu Gly Leu Ser Arg Val Asp Asp Ala Val Ala Ala Asn Thr Arg Gln
1 5 10 15

Cys Ala Gln Arg Arg Asp Arg Arg Gly Gly Glu Gly Arg Gly Gln Gly
20 25 30

Ile Glu Pro Ser Pro Ala Ser Ala Thr Pro Gly Thr Arg Gly Val Cys
35 40 45

Arg Met Pro Val Thr Arg Leu His Glu Gly Arg Phe His Leu Arg His
50 55 60

Arg His Arg His Gly Leu Trp Leu Ala Asp Val His Ser Glu Glu Val
65 70 75 80

Ser Ile Pro Phe Ala Val Glu Pro Pro Ser Gly Arg Gly Cys Arg Leu
85 90 95

Cys Gly Gln Leu Arg Gly Asp Glu Ser Gly Val Gly Glu Met Gln Gln
100 105 110

Pro Leu Ala Leu Pro Gly Asp Arg Ala Ala Pro Gln Arg Gln Glu His
115 120 125

Arg Ser Glu Lys Leu Gly Glu Leu Gln Gln Gly His Arg Gly Leu Gly
130 135 140

Ala Gly Gly Val Trp Asn Thr Ala Phe Met Pro Pro Asp Pro Arg Pro
145 150 155 160

Thr Leu Pro Thr Pro Xaa Gly Thr Pro Val Val Ser Ser Val Arg Met
165 170 175

Cys Gly Gln Ala
180

<210> 971
<211> 130
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (85)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (91)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (103)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (106)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (112)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (116)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (118)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (126)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 971
Pro Arg Val Arg Pro Arg Val Leu Asp Leu Leu Cys Lys Asn Met Lys
1   5   10   15

His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp Val Leu
            20   25   30

Ser Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser
        35   40   45

Gln Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser
50 55 60

Gly Ala Tyr Tyr Trp Ser Trp Ile Arg Gln His Pro Gly Lys Gly Leu
65 70 75 80

Glu Trp Ile Gly Xaa Ile Tyr Tyr Ser Gly Xaa Thr Tyr Tyr Asn Pro
85 90 95

Ser Leu Lys Ser Leu Val Xaa Ile Ser Xaa Asp Thr Ser Lys Asn Xaa
100 105 110

Phe Ser Leu Xaa Leu Xaa Ser Val Thr Ala Ala Asp Thr Xaa Val Tyr
115 120 125

Tyr Cys
130

<210> 972
<211> 210
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (52)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (67)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (73)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE
<222> (110)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 972
Ala Gly Ser Ser Trp Lys Cys Arg Gly Cys Ser Leu Pro Xaa Leu Pro
1 5 10 15

Pro Pro Pro Ala Cys Ala Leu Leu Leu Pro Trp Pro Arg Thr Trp Val
20 25 30

Phe Pro Ser Pro Ala Xaa Gly Trp Arg Trp Leu Thr Arg Ser Arg Tyr
35 40 45

Pro Leu Thr Xaa Ser Arg Thr Ser Thr Arg Ser Ser Met Gly Met Ser
50 55 60

Leu Val Xaa Gly Pro Leu Gln Gly Xaa Leu Pro Cys Arg Arg Asp Pro
65 70 75 80

Arg Val Cys Pro Gly Thr Pro Ser Ser Gln Arg His Leu Pro Val Gly
85 90 95

Glu Val Val Lys Gln Ala Asp Val Val Leu Leu Gly Tyr Xaa Val Pro
100 105 110

Phe Ser Leu Ser Pro Asp Val Arg Arg Lys Asn Leu Glu Ile Tyr Glu
115 120 125

Ala Val Thr Ser Pro Gln Gly Pro Ala Met Thr Trp Ser Met Phe Ala
130 135 140

Val Gly Trp Met Glu Leu Lys Asp Ala Val Arg Ala Arg Gly Leu Leu
145 150 155 160

Asp Arg Ser Phe Ala Asn Met Ala Glu Pro Phe Lys Val Trp Thr Glu
165 170 175

Asn Ala Asp Gly Ser Gly Ala Val Asn Phe Leu Thr Gly Met Gly Gly
180 185 190

Phe Cys Arg Arg Trp Ser Ser Gly Ala Arg Gly Ser Gly Ser Pro Glu
195 200 205

Arg Val
210

<210> 973
<211> 248

<212> PRT
<213> Homo sapiens

<400> 973
Ser Arg Val Arg Gly Cys Ser Arg Ser Arg Gln Pro Gln Ala Arg Gly
1   5   10   15

Gly Arg Trp Ala Arg Asp Pro Thr Leu Val Val Met Glu Ala Gly Gly
            20   25   30

Phe Leu Asp Ser Leu Ile Tyr Gly Ala Cys Val Val Phe Thr Leu Gly
        35   40   45

Met Phe Ser Ala Gly Leu Ser Asp Leu Arg His Met Arg Met Thr Arg
    50   55   60

Ser Val Asp Asn Val Gln Phe Leu Pro Phe Leu Thr Thr Glu Val Asn
65   70   75   80

Asn Leu Gly Trp Leu Ser Tyr Gly Ala Leu Lys Gly Asp Gly Ile Leu
                85   90   95

Ile Val Val Asn Thr Val Gly Ala Ala Leu Gln Thr Leu Tyr Ile Leu
            100   105   110

Ala Tyr Leu His Tyr Cys Pro Arg Lys Arg Val Val Leu Leu Gln Thr
        115   120   125

Ala Thr Leu Leu Gly Val Leu Leu Leu Gly Tyr Gly Tyr Phe Trp Leu
    130   135   140

Leu Val Pro Asn Pro Glu Ala Arg Leu Gln Gln Leu Gly Leu Phe Cys
145   150   155   160

Ser Val Phe Thr Ile Ser Met Tyr Leu Ser Pro Leu Ala Asp Leu Ala
                165   170   175

Lys Val Ile Gln Thr Lys Ser Thr Gln Cys Leu Ser Tyr Pro Leu Thr
            180   185   190

Ile Ala Thr Leu Leu Thr Ser Ala Ser Trp Cys Leu Tyr Gly Phe Arg
        195   200   205

Leu Arg Asp Pro Tyr Ile Met Val Ser Asn Phe Pro Gly Ile Val Thr
    210   215   220

Ser Phe Ile Arg Phe Trp Leu Phe Trp Lys Tyr Pro Gln Glu Gln Asp
225   230   235   240

Arg Asn Tyr Trp Leu Leu Gln Thr
                245

<210> 974
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (10)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 974
Ser Xaa Leu Pro Phe Ile Lys Gly Asn Xaa Ser Trp Ser Phe His Arg
1 5 10 15

Gly Gly Gly Arg Ser Arg Thr Ser Gly Ser Pro Gly Leu Gln Glu Phe
20 25 30

Gly Thr Arg Arg Glu Leu Val Ser Arg Arg Ala Gln Arg Thr Ala Thr
35 40 45

Asp Ser Pro Gly His Pro Pro Thr Ala His Gly Xaa Gln Gln Ser Arg
50 55 60

Lys Ala Arg Pro Gly Gln Arg Lys Pro Ser Arg Ala Gly Trp Arg Leu
65 70 75 80

Arg Ala Ala Ala Pro Thr Gly Gln Arg Pro Pro His Val Pro Ala Pro
85 90 95

Thr Pro Arg Pro Ser Gly Gln His Glu Ala Pro Gly Gly Arg Ala Ala
100 105 110

Pro Ala Ala Ala Gly Ala Val His Arg Ala Cys Gly Arg Val Gln Met
115 120 125

Gln Val Leu Pro Glu Gly Pro Lys Ile Arg Tyr Ser Asp Val Lys Lys
130 135 140

Leu Glu Met Lys Pro Lys Tyr Pro His Cys Glu Glu Lys Met Val Ile
145 150 155 160

Ile Thr Thr Lys Ser Val Ser Arg Tyr Arg Gly Gln Glu His Cys Leu
165 170 175

His Pro Lys Leu Gln Ser Thr Lys Arg Phe Ile Lys Trp Tyr Asn Ala
180 185 190

Trp Asn Glu Lys Arg Arg Val Tyr Glu Glu
195 200

<210> 975
<211> 260
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (212)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 975
Leu Cys Leu Pro Phe Pro Thr Gly Glu Thr Pro Ser Leu Gly Phe Thr
1 5 10 15

Val Thr Leu Val Leu Leu Asn Ser Leu Ala Phe Leu Leu Met Ala Val
20 25 30

Ile Tyr Thr Lys Leu Tyr Cys Asn Leu Glu Lys Glu Asp Leu Ser Glu
35 40 45

Asn Ser Gln Ser Ser Met Ile Lys His Val Ala Trp Leu Ile Phe Thr
50 55 60

Asn Cys Ile Phe Phe Cys Pro Val Ala Phe Phe Ser Phe Ala Pro Leu
65 70 75 80

Ile Thr Ala Ile Ser Ile Ser Pro Glu Ile Met Lys Ser Val Thr Leu
85 90 95

Ile Phe Phe Pro Leu Pro Ala Cys Leu Asn Pro Val Leu Tyr Val Phe
100 105 110

Phe Asn Pro Lys Phe Lys Glu Asp Trp Lys Leu Leu Lys Arg Arg Val
115 120 125

Thr Lys Lys Ser Gly Ser Val Ser Val Ser Ile Ser Ser Gln Gly Gly
130 135 140

Cys Leu Glu Gln Asp Phe Tyr Tyr Asp Cys Gly Met Tyr Ser His Leu
145 150 155 160

Gln Gly Asn Leu Thr Val Cys Asp Cys Cys Glu Ser Phe Leu Leu Thr
165 170 175

Lys Pro Val Ser Cys Lys His Leu Ile Lys Ser His Ser Cys Pro Ala
180 185 190

Leu Ala Val Ala Ser Cys Gln Arg Pro Glu Gly Tyr Trp Ser Asp Cys
195 200 205

Gly Thr Gln Xaa Ala His Ser Asp Tyr Ala Asp Glu Glu Asp Ser Phe
210 215 220

Val Ser Asp Ser Ser Asp Gln Val Gln Ala Cys Gly Arg Ala Cys Phe
225 230 235 240

Tyr Gln Ser Arg Gly Phe Pro Leu Val Arg Tyr Ala Tyr Asn Leu Pro
245 250 255

Arg Val Lys Asp
260

<210> 976
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (10)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 976
Arg Ser Arg Lys Gln Glu Ala Ala Cys Xaa Pro Gln Asp Leu Pro Gly
1 5 10 15

Trp Gly Asn Trp Arg Leu Leu Gly Gly Gly Thr Val His Ala Lys Met
20 25 30

Ala Val Ser Thr Glu Glu Leu Glu Ala Thr Val Gln Glu Val Leu Gly
35 40 45

Arg Leu Lys Ser His Gln Phe Phe Gln Ser Thr Trp Asp Thr Val Ala
50 55 60

Phe Ile Val Phe Leu Thr Phe Met Gly Thr Val Leu Leu Leu Leu Leu

65 70 75 80

Leu Val Val Ala His Cys Cys Cys Cys Ser Ser Pro Gly Pro Arg Arg
85 90 95

Glu Ser Pro Arg Lys Glu Arg Pro Lys Gly Val Asp Asn Leu Ala Leu
100 105 110

Glu Pro

<210> 977
<211> 413
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (58)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (75)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (125)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 977
Thr Pro Pro Thr His Gly Pro Thr Ala Asp Gln Pro Met Arg Pro Val
1 5 10 15

Arg Val Pro Glu Arg Gly Pro Val His Arg Gly Ala Ala Gly Ala His
20 25 30

Leu Pro Leu Pro Thr Arg Leu Arg Arg Pro Gln Met Arg Glu Ala His
35 40 45

His Cys Gln Leu Arg Gly Gln Arg Leu Xaa Arg Gly Thr Gly Leu Arg
50 55 60

Gln Gly Pro Thr Pro Gly Gln His Leu Pro Xaa Gly Gly Pro Asp Lys
65 70 75 80

Asp Asn Gly Ile Leu Leu Tyr Lys Gly Asp Asn Asp Pro Leu Ala Leu
85 90 95

Glu Leu Tyr Gln Gly His Val Arg Leu Val Tyr Asp Ser Leu Ser Ser
100 105 110

Pro Pro Thr Thr Val Tyr Ser Val Glu Thr Val Asn Xaa Gly Gln Phe
115 120 125

His Ser Val Glu Leu Val Thr Leu Asn Gln Thr Leu Asn Leu Val Val
130 135 140

Asp Lys Gly Thr Pro Lys Ser Leu Gly Lys Leu Gln Lys Gln Pro Ala
145 150 155 160

Val Gly Ile Asn Ser Pro Leu Tyr Leu Gly Gly Ile Pro Thr Ser Thr
165 170 175

Gly Leu Ser Ala Leu Arg Gln Gly Thr Asp Arg Pro Leu Gly Gly Phe
180 185 190

His Gly Cys Ile His Glu Val Arg Ile Asn Asn Glu Leu Gln Asp Phe
195 200 205

Lys Ala Leu Pro Pro Gln Ser Leu Gly Val Ser Pro Gly Cys Lys Ser
210 215 220

Cys Thr Val Cys Lys His Gly Leu Cys Arg Ser Val Glu Lys Asp Ser
225 230 235 240

Val Val Cys Glu Cys Arg Pro Gly Trp Thr Gly Pro Leu Cys Asp Gln
245 250 255

Glu Ala Arg Asp Pro Cys Leu Gly His Arg Cys His His Gly Lys Cys
260 265 270

Val Ala Thr Gly Thr Ser Tyr Met Cys Lys Cys Ala Glu Gly Tyr Gly
275 280 285

Gly Asp Leu Cys Asp Asn Lys Asn Asp Ser Ala Asn Ala Cys Ser Ala
290 295 300

Phe Lys Cys His His Gly Gln Cys His Ile Ser Asp Gln Gly Glu Pro
305 310 315 320

Tyr Cys Leu Cys Gln Pro Gly Phe Ser Gly Glu His Cys Gln Gln Glu
325 330 335

Asn Pro Cys Leu Gly Gln Val Val Arg Glu Val Ile Arg Arg Gln Lys
340 345 350

Gly Tyr Ala Ser Cys Ala Thr Ala Ser Lys Val Pro Ile Met Glu Cys
355 360 365

Arg Gly Gly Cys Gly Pro Gln Cys Cys Gln Pro Thr Arg Ser Lys Arg
370 375 380

Arg Lys Tyr Val Phe Gln Cys Thr Asp Gly Ser Ser Phe Val Glu Glu
385 390 395 400

Val Glu Arg His Leu Glu Cys Gly Cys Leu Ala Cys Ser
405 410

<210> 978
<211> 271
<212> PRT
<213> Homo sapiens

<400> 978
Thr Gln Arg Met Ser Gly Lys His Tyr Lys Gly Pro Glu Val Ser Cys
1 5 10 15

Cys Ile Lys Tyr Phe Ile Phe Gly Phe Asn Val Ile Phe Trp Phe Leu
20 25 30

Gly Ile Thr Phe Leu Gly Ile Gly Leu Trp Ala Trp Asn Glu Lys Gly
35 40 45

Val Leu Ser Asn Ile Ser Ser Ile Thr Asp Leu Gly Gly Phe Asp Pro
50 55 60

Val Trp Leu Phe Leu Val Val Gly Gly Val Met Phe Ile Leu Gly Phe
65 70 75 80

Ala Gly Cys Ile Gly Ala Leu Arg Glu Asn Thr Phe Leu Leu Lys Phe
85 90 95

Phe Ser Val Phe Leu Gly Ile Ile Phe Phe Leu Glu Leu Thr Ala Gly
100 105 110

Val Leu Ala Phe Val Phe Lys Asp Trp Ile Lys Asp Gln Leu Tyr Phe
115 120 125

Phe Ile Asn Asn Asn Ile Arg Ala Tyr Arg Asp Asp Ile Asp Leu Gln
130 135 140

Asn Leu Ile Asp Phe Thr Gln Glu Tyr Trp Gln Cys Cys Gly Ala Phe
145 150 155 160

Gly Ala Asp Asp Trp Asn Leu Asn Ile Tyr Phe Asn Cys Thr Asp Ser
165 170 175

Asn Ala Ser Arg Glu Arg Cys Gly Val Pro Phe Ser Cys Cys Thr Lys
180 185 190

Asp Pro Ala Glu Asp Val Ile Asn Thr Gln Cys Gly Tyr Asp Ala Arg
195 200 205

Gln Lys Pro Glu Val Asp Gln Gln Ile Val Ile Tyr Thr Lys Gly Cys
210 215 220

Val Pro Gln Phe Glu Lys Trp Leu Gln Asp Asn Leu Thr Ile Val Ala
225 230 235 240

Gly Ile Phe Ile Gly Ile Ala Leu Leu Gln Ile Phe Gly Ile Cys Leu
245 250 255

Ala Gln Asn Leu Val Ser Asp Ile Glu Ala Val Arg Ala Ser Trp
260 265 270

<210> 979
<211> 674
<212> PRT
<213> Homo sapiens

<400> 979
Pro Gly Arg Thr Gly Ala Ala Gly Pro Ala Gly Pro Ala Gly Pro Arg
1 5 10 15

Gly Ser Pro Gly Glu Arg Gly Glu Val Gly Pro Ala Gly Pro Asn Gly
20 25 30

Phe Ala Gly Pro Ala Gly Ala Ala Gly Gln Pro Gly Ala Lys Gly Glu
35 40 45

Arg Gly Ala Lys Gly Pro Lys Gly Glu Asn Gly Val Val Gly Pro Thr
50 55 60

Gly Pro Val Gly Ala Ala Gly Pro Ala Gly Pro Asn Gly Pro Pro Gly
65 70 75 80

Pro Ala Gly Ser Arg Gly Asp Gly Gly Pro Pro Gly Met Thr Gly Phe
85 90 95

Pro Gly Ala Ala Gly Arg Thr Gly Pro Pro Gly Pro Ser Gly Ile Ser
100 105 110

Gly Pro Pro Gly Pro Pro Gly Pro Ala Gly Lys Glu Gly Leu Arg Gly
115 120 125

Pro Arg Gly Asp Gln Gly Pro Val Gly Arg Thr Gly Glu Val Gly Ala

130 135 140

Val Gly Pro Pro Gly Phe Ala Gly Glu Lys Gly Pro Ser Gly Glu Ala
145 150 155 160

Gly Thr Ala Gly Pro Pro Gly Thr Pro Gly Pro Gln Gly Leu Leu Gly
165 170 175

Ala Pro Gly Ile Leu Gly Leu Pro Gly Ser Arg Gly Glu Arg Gly Leu
180 185 190

Pro Gly Val Ala Gly Ala Val Gly Glu Pro Gly Pro Leu Gly Ile Ala
195 200 205

Gly Pro Pro Gly Ala Arg Gly Pro Pro Gly Ala Val Gly Ser Pro Gly
210 215 220

Val Asn Gly Ala Pro Gly Glu Ala Gly Arg Asp Gly Asn Pro Gly Asn
225 230 235 240

Asp Gly Pro Pro Gly Arg Asp Gly Gln Pro Gly His Lys Gly Glu Arg
245 250 255

Gly Tyr Pro Gly Asn Ile Gly Pro Val Gly Ala Ala Gly Ala Pro Gly
260 265 270

Pro His Gly Pro Val Gly Pro Ala Gly Lys His Gly Asn Arg Gly Glu
275 280 285

Thr Gly Pro Ser Gly Pro Val Gly Pro Ala Gly Ala Val Gly Pro Arg
290 295 300

Gly Pro Ser Gly Pro Gln Gly Ile Arg Gly Asp Lys Gly Glu Pro Gly
305 310 315 320

Glu Lys Gly Pro Arg Gly Leu Pro Gly Leu Lys Gly His Asn Gly Leu
325 330 335

Gln Gly Leu Pro Gly Ile Ala Gly His His Gly Asp Gln Gly Ala Pro
340 345 350

Gly Ser Val Gly Pro Ala Gly Pro Arg Gly Pro Ala Gly Pro Ser Gly
355 360 365

Pro Ala Gly Lys Asp Gly Arg Thr Gly His Pro Gly Thr Val Gly Pro
370 375 380

Ala Gly Ile Arg Gly Pro Gln Gly His Gln Gly Pro Ala Gly Pro Pro
385 390 395 400

Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Val Ser Gly Gly Gly Tyr

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                405                 410                 415

Asp Phe Gly Tyr Asp Gly Asp Phe Tyr Arg Ala Asp Gln Pro Arg Ser
            420                 425                 430

Ala Pro Ser Leu Arg Pro Lys Asp Tyr Glu Val Asp Ala Thr Leu Lys
        435                 440                 445

Ser Leu Asn Asn Gln Ile Glu Thr Leu Leu Thr Pro Glu Gly Ser Arg
    450                 455                 460

Lys Asn Pro Ala Arg Thr Cys Arg Asp Leu Arg Leu Ser His Pro Glu
465                 470                 475                 480

Trp Ser Ser Gly Tyr Tyr Trp Ile Asp Pro Asn Gln Gly Cys Thr Met
                485                 490                 495

Asp Ala Ile Lys Val Tyr Cys Asp Phe Ser Thr Gly Glu Thr Cys Ile
            500                 505                 510

Arg Ala Gln Pro Glu Asn Ile Pro Ala Lys Asn Trp Tyr Arg Ser Ser
        515                 520                 525

Lys Asp Lys Lys His Val Trp Leu Gly Glu Thr Ile Asn Ala Gly Ser
    530                 535                 540

Gln Phe Glu Tyr Asn Val Glu Gly Val Thr Ser Lys Glu Met Ala Thr
545                 550                 555                 560

Gln Leu Ala Phe Met Arg Leu Leu Ala Asn Tyr Ala Ser Gln Asn Ile
                565                 570                 575

Thr Tyr His Cys Lys Asn Ser Ile Ala Tyr Met Asp Glu Glu Thr Gly
            580                 585                 590

Asn Leu Lys Lys Ala Val Ile Leu Gln Gly Ser Asn Asp Val Glu Leu
        595                 600                 605

Val Ala Glu Gly Asn Ser Arg Phe Thr Tyr Thr Val Leu Val Asp Gly
    610                 615                 620

Cys Ser Lys Lys Thr Asn Glu Trp Gly Lys Thr Ile Ile Glu Tyr Lys
625                 630                 635                 640

Thr Asn Lys Pro Ser Arg Leu Pro Phe Leu Asp Ile Ala Pro Leu Asp
                645                 650                 655

Ile Gly Gly Ala Asp Gln Glu Phe Phe Val Asp Ile Gly Pro Val Cys
            660                 665                 670

Phe Lys
```

<210> 980
<211> 120
<212> PRT
<213> Homo sapiens

<400> 980
Cys Pro Leu Cys Ser Ala Ala Gly Ser Arg Arg Thr Ala Gly Arg Met
1   5   10   15

Thr Gln Asn Thr Val Ile Val Asn Gly Val Ala Met Ala Ser Arg Pro
            20   25   30

Ser Gln Pro Thr His Val Asn Val His Ile His Gln Glu Ser Ala Leu
        35   40   45

Thr Gln Leu Leu Lys Ala Gly Gly Ser Leu Lys Lys Phe Leu Phe His
    50   55   60

Pro Gly Asp Thr Val Pro Ser Thr Ala Arg Ile Gly Tyr Glu Gln Leu
65   70   75   80

Ala Leu Gly Val Thr Gln Ile Leu Leu Gly Val Val Ser Cys Val Leu
                85   90   95

Gly Val Cys Leu Ser Leu Gly Pro Trp Thr Val Leu Ser Ala Ser Ala
            100   105   110

Val Pro Ser Gly Arg Gly Leu Trp
        115   120

<210> 981
<211> 76
<212> PRT
<213> Homo sapiens

<400> 981
Ile Pro Gly Ser Tyr Leu Arg Ile Val Tyr Lys Thr Thr Cys Asn Pro
1   5   10   15

Phe Met Lys Asn Val Phe Lys Tyr Cys Phe Leu Leu Leu Cys Ser Ala
            20   25   30

Leu Ser Leu Val Leu Pro Leu Ser Pro Glu Cys Ser Ile Ile Tyr Arg
        35   40   45

Leu Tyr Ile Thr Thr Ser Ile Ala Phe Gly Gly Lys Ser Arg Phe Ser
50 55 60

Cys Asn Phe Pro Ala Val Lys Met Leu Pro Cys Ile
65 70 75

<210> 982
<211> 208
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (180)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (192)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (193)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (194)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (195)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (200)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 982

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Xaa Ser Phe Xaa Thr Gln Pro Ser Xaa Ser Thr Thr Thr Ser Pro Leu
 1               5                  10                  15

Trp Ala Asn Thr Val Thr Leu Ala Gly Gly Lys Leu His Ser Lys Gly
            20                  25                  30

Leu Lys Tyr Phe His His Phe Thr Leu Ser Leu Cys Gly Asn Gln Gly
        35                  40                  45

Arg Lys Met Ser Val Cys Thr Asp Asn Val Thr Asp Leu Arg Ile Pro
    50                  55                  60

Glu Gly Glu Ser Gly Phe Ser Lys Ser Ile Thr Ala Tyr Val Cys Gln
65                  70                  75                  80

Ala Val Ile Ile Pro Pro Glu Val Thr Gly Tyr Lys Ala Gly Val Ser
                85                  90                  95

Ser Gln Pro Val Ser Leu Ala Asp Arg Leu Ile Gly Val Thr Thr Asp
            100                 105                 110

Met Thr Leu Asp Gly Ile Thr Ser Pro Ala Glu Leu Phe His Leu Glu
        115                 120                 125

Ser Leu Gly Ile Pro Asp Val Ile Phe Phe Tyr Arg Ser Asn Asp Val
    130                 135                 140

Thr Gln Ser Cys Ser Ser Gly Arg Ser Thr Thr Ile Arg Val Arg Cys
145                 150                 155                 160

Ser Pro Gln Lys Thr Val Pro Gly Ser Leu Leu Leu Pro Gly Thr Cys
                165                 170                 175

Ser Asp Gly Xaa Cys Asp Gly Cys Asn Phe His Phe Leu Trp Glu Xaa
            180                 185                 190

Xaa Xaa Xaa Ala Arg Ser Ala Xaa Trp Leu Thr Thr Met Leu Ser Ser
        195                 200                 205
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<210> 983
<211> 261
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (91)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (92)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (259)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (260)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 983
Val Thr Gly Gly Glu Leu Phe Glu Asp Ile Val Ala Arg Glu Tyr Tyr
1 5 10 15

Ser Glu Ala Asp Ala Ser His Cys Ile Gln Gln Ile Leu Glu Ala Val
20 25 30

Leu His Cys His Gln Met Gly Val Val His Arg Asp Leu Lys Pro Glu
35 40 45

Asn Leu Leu Leu Ala Ser Lys Ser Lys Gly Ala Ala Val Lys Leu Ala
50 55 60

Asp Phe Gly Leu Ala Ile Glu Val Gln Gly Asp Gln Gln Ala Trp Phe
65 70 75 80

Gly Phe Ala Gly Thr Pro Gly Tyr Leu Ser Xaa Xaa Val Leu Arg Lys
85 90 95

Asp Pro Tyr Gly Lys Pro Val Asp Met Trp Ala Cys Gly Val Ile Leu
100 105 110

Tyr Ile Leu Leu Val Gly Tyr Pro Pro Phe Trp Asp Glu Asp Gln His
115 120 125

Arg Leu Tyr Gln Gln Ile Lys Ala Gly Ala Tyr Asp Phe Pro Ser Pro
    130   135   140

Glu Trp Asp Thr Val Thr Pro Glu Ala Lys Asp Leu Ile Asn Lys Met
145   150   155   160

Leu Thr Ile Asn Pro Ala Lys Arg Ile Thr Ala Ser Glu Ala Leu Lys
                165   170   175

His Pro Trp Ile Cys Gln Arg Ser Thr Val Ala Ser Met Met His Arg
            180   185   190

Gln Glu Thr Val Asp Cys Leu Lys Lys Phe Asn Ala Arg Arg Lys Leu
        195   200   205

Lys Gly Ala Ile Leu Thr Thr Met Leu Ala Thr Arg Asn Phe Ser Ala
    210   215   220

Ala Lys Ser Leu Leu Lys Lys Pro Asp Gly Val Lys Glu Ser Thr Glu
225   230   235   240

Ser Ser Asn Thr Thr Ile Glu Asp Glu Phe Ser Leu Asp Leu Thr Arg
                245   250   255

Leu Thr Xaa Xaa Gly
            260

<210> 984
<211> 283
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (103)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (268)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 984
Ser Thr His Ala Ser Gly Arg Met Ala Ala Glu Gly Trp Ile Trp Arg
  1   5   10   15

Trp Gly Trp Gly Arg Arg Cys Leu Gly Arg Pro Gly Leu Leu Gly Pro
             20   25   30

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Gly Pro Gly Pro Thr Thr Pro Leu Phe Leu Leu Leu Leu Leu Gly Ser
        35                  40                  45

Val Thr Ala Asp Ile Thr Asp Gly Asn Ser Glu His Leu Lys Arg Glu
    50                  55                  60

His Ser Leu Ile Lys Pro Tyr Gln Gly Val Gly Ser Ser Ser Met Pro
65                  70                  75                  80

Leu Trp Asp Phe Gln Gly Ser Thr Met Leu Thr Ser Gln Tyr Val Arg
                85                  90                  95

Leu Thr Pro Asp Glu Arg Xaa Lys Glu Gly Ser Ile Trp Asn His Gln
            100                 105                 110

Pro Cys Phe Leu Lys Asp Trp Glu Met His Val His Phe Lys Val His
        115                 120                 125

Gly Thr Gly Lys Lys Asn Leu His Gly Asp Gly Ile Ala Leu Trp Tyr
    130                 135                 140

Thr Arg Asp Arg Leu Val Pro Gly Pro Val Phe Gly Ser Lys Asp Asn
145                 150                 155                 160

Phe His Gly Leu Ala Ile Phe Leu Asp Thr Tyr Pro Asn Asp Glu Thr
                165                 170                 175

Thr Glu Arg Val Phe Pro Tyr Ile Ser Val Met Val Asn Asn Gly Ser
            180                 185                 190

Leu Ser Tyr Asp His Ser Lys Asp Gly Arg Trp Thr Glu Leu Ala Gly
        195                 200                 205

Cys Thr Ala Asp Phe Arg Asn Arg Asp His Asp Thr Phe Leu Ala Val
    210                 215                 220

Arg Tyr Ser Arg Gly Arg Leu Thr Val Met Thr Asp Leu Glu Asp Lys
225                 230                 235                 240

Asn Glu Trp Lys Asn Cys Ile Asp Ile Thr Gly Val Arg Leu Pro Thr
                245                 250                 255

Gly Tyr Tyr Phe Gly Ala Ser Ala Gly Thr Gly Xaa Leu Ser Asp Asn
            260                 265                 270

His Asp Ile Ile Ser Met Lys Ala Val Pro Ser
        275                 280
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<210> 985

<211> 144
<212> PRT
<213> Homo sapiens

<400> 985
Ala Arg Gly Arg Ala Glu Val Leu Gly Arg Ala Val Glu Pro Pro Pro
1 5 10 15

Gly Arg Cys Trp Ser Thr Pro Pro Val Ala Pro Pro Ala Arg Ser Ala
20 25 30

Ser Ala Ala Ala Met Gly Val Gln Val Glu Thr Ile Ser Pro Gly Asp
35 40 45

Gly Arg Thr Phe Pro Lys Arg Gly Gln Thr Cys Val Val His Tyr Thr
50 55 60

Gly Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn
65 70 75 80

Lys Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp
85 90 95

Glu Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr
100 105 110

Ile Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile
115 120 125

Pro Pro His Ala Thr Leu Val Phe Asp Val Glu Leu Leu Lys Leu Glu
130 135 140

<210> 986
<211> 75
<212> PRT
<213> Homo sapiens

<400> 986
Ile Phe Val Cys Leu Cys Val Cys Leu Ser Cys Val Ile Leu Leu Gly
1 5 10 15

Ala Ser Ala Asn Ser Leu Thr Val Val Pro Ser Leu Thr Leu Pro Val
20 25 30

His His Leu Arg Arg Leu Asp Pro Ser Leu Thr Ser Pro Phe Leu Lys
35 40 45

Pro Val Ser Phe Ser Leu Leu Pro Asn Trp Leu Trp Leu Phe Leu Gln
50 55 60

Pro Phe His Ser Arg Ala Ile Phe Ala Lys Glu
65 70 75

<210> 987
<211> 332
<212> PRT
<213> Homo sapiens

<400> 987
Arg Thr Arg Gly Arg Thr Arg Gly Arg Thr Arg Gly Arg Val Ala Trp
1 5 10 15

Trp Leu Arg Leu Ser Val Arg Pro Pro Ala Gly Ala Ile Met Ala Asp
20 25 30

Ala Ala Ser Gln Val Leu Leu Gly Ser Gly Leu Thr Ile Leu Ser Gln
35 40 45

Pro Leu Met Tyr Val Lys Val Leu Ile Gln Val Gly Tyr Glu Pro Leu
50 55 60

Pro Pro Thr Ile Gly Arg Asn Ile Phe Gly Arg Gln Val Cys Gln Leu
65 70 75 80

Pro Gly Leu Phe Ser Tyr Ala Gln His Ile Ala Ser Ile Asp Gly Arg
85 90 95

Arg Gly Leu Phe Thr Gly Leu Thr Pro Arg Leu Cys Ser Gly Val Leu
100 105 110

Gly Thr Val Val His Gly Lys Val Leu Gln His Tyr Gln Glu Ser Asp
115 120 125

Lys Gly Glu Glu Leu Gly Pro Gly Asn Val Gln Lys Glu Val Ser Ser
130 135 140

Ser Phe Asp His Val Ile Lys Glu Thr Thr Arg Glu Met Ile Ala Arg
145 150 155 160

Ser Ala Ala Thr Leu Ile Thr His Pro Phe His Val Ile Thr Leu Arg
165 170 175

Ser Met Val Gln Phe Ile Gly Arg Glu Ser Lys Tyr Cys Gly Leu Cys
180 185 190

Asp Ser Ile Ile Thr Ile Tyr Arg Glu Glu Gly Ile Leu Gly Phe Phe
195 200 205

Ala Gly Leu Val Pro Arg Leu Leu Gly Asp Ile Leu Ser Leu Trp Leu
210 215 220

Cys Asn Ser Leu Ala Tyr Leu Val Asn Thr Tyr Ala Leu Asp Ser Gly
225 230 235 240

Val Ser Thr Met Asn Glu Met Lys Ser Tyr Ser Gln Ala Val Thr Gly
245 250 255

Phe Phe Ala Ser Met Leu Thr Tyr Pro Phe Val Leu Val Ser Asn Leu
260 265 270

Met Ala Val Asn Asn Cys Gly Leu Ala Gly Gly Cys Pro Pro Tyr Ser
275 280 285

Pro Ile Tyr Thr Ser Trp Ile Asp Cys Trp Cys Met Leu Gln Lys Glu
290 295 300

Gly Asn Met Ser Arg Gly Asn Ser Leu Phe Phe Arg Lys Val Pro Phe
305 310 315 320

Gly Lys Thr Tyr Cys Cys Asp Leu Lys Met Leu Ile
325 330

<210> 988
<211> 909
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (32)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (48)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (52)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (62)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (632)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (851)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 988
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Gly Lys Lys Ala Glu Gly Ala Gln Asn Gln Gly Lys Lys Ala Glu Gly
  1               5                  10                  15

Ala Gln Asn Gln Gly Lys Lys Ala Glu Gly Ala Gln Asn Gln Gly Xaa
             20                  25                  30

Lys Ala Glu Gly Ala Gln Asn Gln Xaa Lys Lys Ala Glu Gly Xaa Xaa
         35                  40                  45

Asn Gln Gly Xaa Lys Ala Glu Gly Ala Xaa Asn Gln Gly Xaa Lys Ala
     50                  55                  60

Glu Gly Ala Gln Asn Gln Gly Lys Lys Ala Glu Gly Ala Gln Asn Gln
 65                  70                  75                  80

Gly Lys Lys Ala Glu Gly Ala Gln Asn Gln Gly Lys Lys Ala Glu Gly
                 85                  90                  95
```

Ala Gln Asn Gln Gly Lys Lys Ala Glu Gly Ala Gln Asn Gln Gly Lys
100 105 110

Lys Ala Glu Gly Ala Gln Asn Gln Gly Lys Lys Val Xaa Gly Ala Gln
115 120 125

Asn Gln Gly Lys Lys Ala Glu Gly Ala Gln Asn Gln Gly Lys Lys Ala
130 135 140

Glu Gly Ala Gln Asn Gln Gly Lys Lys Ala Glu Gly Ala Gln Asn Gln
145 150 155 160

Gly Gln Lys Gly Glu Gly Ala Gln Asn Gln Gly Lys Lys Thr Glu Gly
165 170 175

Ala Gln Gly Lys Lys Ala Glu Arg Ser Pro Asn Gln Gly Lys Lys Gly
180 185 190

Glu Gly Ala Pro Ile Gln Gly Lys Lys Ala Asp Ser Val Ala Asn Gln
195 200 205

Gly Thr Lys Val Glu Gly Ile Thr Asn Gln Gly Lys Lys Ala Glu Gly
210 215 220

Ser Pro Ser Glu Gly Lys Lys Ala Glu Gly Ser Pro Asn Gln Gly Lys
225 230 235 240

Lys Ala Asp Ala Ala Ala Asn Gln Gly Lys Lys Thr Glu Ser Ala Ser
245 250 255

Val Gln Gly Arg Asn Thr Asp Val Ala Gln Ser Pro Glu Ala Pro Lys
260 265 270

Gln Glu Ala Pro Ala Lys Lys Lys Ser Gly Ser Lys Lys Lys Gly Glu
275 280 285

Pro Gly Pro Pro Asp Ala Asp Gly Pro Leu Tyr Leu Pro Tyr Lys Thr
290 295 300

Leu Val Ser Thr Val Gly Ser Met Val Phe Asn Glu Gly Glu Ala Gln
305 310 315 320

Arg Leu Ile Glu Ile Leu Ser Glu Lys Ala Gly Ile Ile Gln Asp Thr
325 330 335

Trp His Lys Ala Thr Gln Lys Gly Asp Pro Val Ala Ile Leu Lys Arg
340 345 350

Gln Leu Glu Glu Lys Glu Lys Leu Leu Ala Thr Glu Gln Glu Asp Ala
355 360 365

Ala Val Ala Lys Ser Lys Leu Arg Glu Leu Asn Lys Glu Met Ala Ala
370 375 380

Glu Lys Ala Lys Ala Ala Ala Gly Glu Ala Lys Val Lys Lys Gln Leu
385 390 395 400

Val Ala Arg Glu Gln Glu Ile Thr Ala Val Gln Ala Arg Met Gln Ala
405 410 415

Ser Tyr Arg Glu His Val Lys Glu Val Gln Gln Leu Gln Gly Lys Ile
420 425 430

Arg Thr Leu Gln Glu Gln Leu Glu Asn Gly Pro Asn Thr Gln Leu Ala
435 440 445

Arg Leu Gln Gln Glu Asn Ser Ile Leu Arg Asp Ala Leu Asn Gln Ala
450 455 460

Thr Ser Gln Val Glu Ser Lys Gln Asn Ala Glu Leu Ala Lys Leu Arg
465 470 475 480

Gln Glu Leu Ser Lys Val Ser Lys Glu Leu Val Glu Lys Ser Glu Ala
485 490 495

Val Arg Gln Asp Glu Gln Gln Arg Lys Ala Leu Glu Ala Lys Ala Ala
500 505 510

Ala Phe Glu Lys Gln Val Leu Gln Leu Gln Ala Ser His Arg Glu Ser
515 520 525

Glu Glu Ala Leu Gln Lys Arg Leu Asp Glu Val Ser Arg Glu Leu Cys
530 535 540

His Thr Gln Ser Ser His Ala Ser Leu Arg Ala Asp Ala Glu Lys Ala
545 550 555 560

Gln Glu Gln Gln Gln Gln Met Ala Glu Leu His Ser Lys Leu Gln Ser
565 570 575

Ser Glu Ala Glu Val Arg Ser Lys Cys Glu Glu Leu Ser Gly Leu His
580 585 590

Gly Gln Leu Gln Glu Ala Arg Ala Glu Asn Ser Gln Leu Thr Glu Arg
595 600 605

Ile Arg Ser Ile Glu Ala Leu Leu Glu Ala Gly Gln Ala Arg Asp Ala
610 615 620

Gln Asp Val Gln Ala Ser Gln Xaa Glu Ala Asp Gln Gln Gln Thr Arg
625 630 635 640

```
Leu Lys Glu Leu Glu Ser Gln Val Ser Gly Leu Glu Lys Glu Ala Ile
                645                 650                 655

Glu Leu Arg Glu Ala Val Glu Gln Gln Lys Val Lys Asn Asn Asp Leu
            660                 665                 670

Arg Glu Lys Asn Trp Lys Ala Met Glu Ala Leu Ala Thr Ala Glu Gln
        675                 680                 685

Ala Cys Lys Glu Lys Leu His Ser Leu Thr Gln Ala Lys Glu Glu Ser
    690                 695                 700

Glu Lys Gln Leu Cys Leu Ile Glu Ala Gln Thr Met Glu Ala Leu Leu
705                 710                 715                 720

Ala Leu Leu Pro Glu Leu Ser Val Leu Ala Gln Gln Asn Tyr Thr Glu
                725                 730                 735

Trp Leu Gln Asp Leu Lys Glu Lys Gly Pro Thr Leu Leu Lys His Pro
            740                 745                 750

Pro Ala Pro Ala Glu Pro Ser Ser Asp Leu Ala Ser Lys Leu Arg Glu
        755                 760                 765

Ala Glu Glu Thr Gln Ser Thr Leu Gln Ala Glu Cys Asp Gln Tyr Arg
    770                 775                 780

Ser Ile Leu Ala Glu Thr Glu Gly Met Leu Arg Asp Leu Gln Lys Ser
785                 790                 795                 800

Val Glu Glu Glu Glu Gln Val Trp Arg Ala Lys Val Gly Ala Ala Glu
                805                 810                 815

Glu Glu Leu Gln Lys Ser Arg Val Thr Val Lys His Leu Glu Glu Ile
            820                 825                 830

Val Glu Lys Leu Lys Gly Glu Leu Glu Ser Ser Asp Gln Val Arg Glu
        835                 840                 845

His Thr Xaa His Leu Glu Ala Glu Leu Glu Lys His Met Ala Ala Ala
    850                 855                 860

Ser Ala Glu Cys Gln Asn Tyr Ala Lys Glu Val Ala Gly Leu Arg Gln
865                 870                 875                 880

Leu Leu Leu Glu Ser Gln Ser Gln Leu Asp Ala Ala Lys Ser Glu Ala
                885                 890                 895

Arg Asn Arg Ala Met Ser Leu Pro Trp Ser Gly Ser Ser
            900                 905
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<210> 989
<211> 100
<212> PRT
<213> Homo sapiens

<400> 989
Trp Cys Ser Arg Ala Val Pro Pro Pro Ser Leu Leu Pro Ala Ser Thr
1   5   10   15

Ser Pro Pro Arg Ser Val Pro Pro Pro Ser Phe Ser Leu Ser Leu Lys
            20   25   30

Ser Val Ser Phe Gly Ser Pro Arg Ala Ser Leu Pro Arg Pro Ser Trp
        35   40   45

Met Arg Pro Pro Ser Pro Lys Pro Ala Cys Phe Ala Val Ser Pro Gly
    50   55   60

Ser Trp Lys Leu Ala Gly Ala Arg Gly Trp Arg Gly His Gly Gly Val
65   70   75   80

Gly Glu Gly Ser Leu Pro Phe Leu Val Arg Ser Ile Ile Val Asn Gly
                85   90   95

Cys Thr Leu Phe
            100

<210> 990
<211> 214
<212> PRT
<213> Homo sapiens

<400> 990
Leu Arg Ile Glu Tyr Ile Asp Asn Gly Cys Val Ile Asn Gly His Leu
1   5   10   15

Asp Phe Pro Ser Thr Thr Pro Leu Ser Gly Met Glu Ser Arg Asn Gly
            20   25   30

Gln Cys Leu Thr Gly Thr Asn Gly Ile Ser Ser Gly Leu Ala Pro Gly
        35   40   45

Gln Pro Phe Pro Ser Ser Gln Gly Ser Leu Cys Ile Ser Gly Thr Glu
    50   55   60

Glu Pro Glu Lys Thr Leu Arg Ala Asn Pro Glu Leu Cys Gly Ser Leu

65 70 75 80

His Leu Asn Gly Ser Pro Ser Ser Cys Ile Ala Ser Arg Pro Ser Trp
85 90 95

Val Glu Asp Ile Gly Asp Asn Leu Tyr Tyr Gly His Tyr His Gly Phe
100 105 110

Gly Asp Thr Ala Glu Ser Met Pro Arg Thr Glu Gln Cys Gly Arg Ala
115 120 125

Phe Gln Val Arg Glu Gly Ala Gly Ala Val Arg Gln Cys Arg Ala Gly
130 135 140

His His Ala Pro Ala Pro Arg Leu Leu Glu Thr Leu Thr Trp Leu Ser
145 150 155 160

Glu Thr Gln Glu Ser Phe Leu Val Ala Ser Ser Glu Tyr Pro Cys Ser
165 170 175

Ser Asn Leu Asn Glu Cys His Asn Leu Tyr Phe Phe Tyr Ile Leu Gln
180 185 190

Leu Ser Glu Lys Val Asn Phe Asp Lys Phe Pro Ala Thr Ala Cys Leu
195 200 205

Cys Met Ser Arg Ala Tyr
210

<210> 991
<211> 263
<212> PRT
<213> Homo sapiens

<400> 991
Gly Pro Val Gly Pro Ala Gly Thr Arg Arg Ser His Ala Leu Gly Pro
1 5 10 15

Arg Pro Gly Ala Arg Ser Ser Phe Arg Leu Arg Cys Glu Leu Arg Arg
20 25 30

Cys Met Cys Gly Asn Asn Met Ser Thr Pro Leu Pro Ala Ile Val Pro
35 40 45

Ala Ala Arg Lys Ala Thr Ala Ala Val Ile Phe Leu His Gly Leu Gly
50 55 60

Asp Thr Gly His Gly Trp Ala Glu Ala Phe Ala Gly Ile Arg Ser Ser
65 70 75 80

His Ile Lys Tyr Ile Cys Pro His Ala Pro Val Arg Pro Val Thr Leu
85 90 95

Asn Met Asn Val Ala Met Pro Ser Trp Phe Asp Ile Ile Gly Leu Ser
100 105 110

Pro Asp Ser Gln Glu Asp Glu Ser Gly Ile Lys Gln Ala Ala Glu Asn
115 120 125

Ile Lys Ala Leu Ile Asp Gln Glu Val Lys Asn Gly Ile Pro Ser Asn
130 135 140

Arg Ile Ile Leu Gly Gly Phe Ser Gln Gly Gly Ala Leu Ser Leu Tyr
145 150 155 160

Thr Ala Leu Thr Thr Gln Gln Lys Leu Ala Gly Val Thr Ala Leu Ser
165 170 175

Cys Trp Leu Pro Leu Arg Ala Ser Phe Pro Gln Gly Pro Ile Gly Gly
180 185 190

Ala Asn Arg Asp Ile Ser Ile Leu Gln Cys His Gly Asp Cys Asp Pro
195 200 205

Leu Val Pro Leu Met Phe Gly Ser Leu Thr Val Glu Lys Leu Lys Thr
210 215 220

Leu Val Asn Pro Ala Asn Val Thr Phe Lys Thr Tyr Glu Gly Met Met
225 230 235 240

His Ser Ser Cys Gln Gln Glu Met Met Asp Val Lys Gln Phe Ile Asp
245 250 255

Lys Leu Leu Pro Pro Ile Asp
260

<210> 992
<211> 256
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (229)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 992
Val Pro Arg Arg Val Leu Glu Pro Leu Leu Gln Arg Ile His Glu Glu

1 5 10 15

Glu Ser Ala Val Val Cys Pro Val Ile Asp Val Ile Asp Trp Asn Thr
20 25 30

Phe Glu Tyr Leu Gly Asn Ser Gly Glu Pro Gln Ile Gly Gly Phe Asp
35 40 45

Trp Arg Leu Val Phe Thr Trp His Thr Val Pro Glu Arg Glu Arg Ile
50 55 60

Arg Met Gln Ser Pro Val Asp Val Ile Arg Ser Pro Thr Met Ala Gly
65 70 75 80

Gly Leu Phe Ala Val Ser Lys Lys Tyr Phe Glu Tyr Leu Gly Ser Tyr
85 90 95

Asp Thr Gly Met Glu Val Trp Gly Gly Glu Asn Leu Glu Phe Ser Phe
100 105 110

Arg Ile Trp Gln Cys Gly Gly Val Leu Glu Thr His Pro Cys Ser His
115 120 125

Val Gly His Val Phe Pro Lys Gln Ala Pro Tyr Ser Arg Asn Lys Ala
130 135 140

Leu Ala Asn Ser Val Arg Ala Ala Glu Val Trp Met Asp Glu Phe Lys
145 150 155 160

Glu Leu Tyr Tyr His Arg Asn Pro Arg Ala Arg Leu Glu Pro Phe Gly
165 170 175

Asp Val Thr Glu Arg Lys Gln Leu Arg Asp Lys Leu Gln Cys Lys Asp
180 185 190

Phe Lys Trp Phe Leu Glu Thr Val Tyr Pro Glu Leu His Val Pro Glu
195 200 205

Asp Arg Pro Gly Phe Phe Gly Met Leu Gln Asn Lys Gly Leu Thr Asp
210 215 220

Tyr Cys Phe Asp Xaa Asn Pro Pro Asp Glu Asn Gln Ile Val Gly His
225 230 235 240

Gln Val Ile Leu Tyr Leu Cys His Gly Met Gly Gln Asn Asp Leu Val
245 250 255

<210> 993
<211> 70
<212> PRT
<213> Homo sapiens

<400> 993
Val Val Trp Ser Arg Val Cys Gly Phe Ser Gly Pro Ile Ile Met Ala
1   5   10   15

Ala Ser Glu Ser Glu Glu Ser His Arg Ala Val Gly Glu Leu Leu Leu
            20   25   30

Pro Ser Pro Ser Pro Phe Val Ala Pro Thr Leu Ala Ala Tyr Phe Cys
        35   40   45

Ser Ser Ala Gly Glu Ser Val Trp Ala Ser Ser Ser Pro Ser Leu Ser
    50   55   60

Pro Cys Tyr Phe Met Gly
65   70

<210> 994
<211> 220
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 994
Asp Tyr Ala Xaa Thr Pro Gln Gly Leu Cys Tyr Asp Val Ala Cys Thr
1   5   10   15

Arg Lys Leu Gly Pro Leu Glu Gly Ser Ser Arg Ala Ala Ala Ala Ala
            20   25   30

Phe Gly Glu Ser Ala Gly Gln Met Ser Asn Glu Arg Gly Phe Glu Asn
        35   40   45

Val Glu Leu Gly Val Ile Gly Lys Lys Lys Lys Val Pro Arg Arg Val
    50   55   60

Ile His Phe Val Ser Gly Glu Thr Met Glu Glu Tyr Ser Thr Asp Glu
65   70   75   80

Asp Glu Val Asp Gly Leu Glu Lys Lys Asp Val Leu Pro Thr Val Asp

85 90 95

Pro Thr Lys Leu Thr Trp Gly Pro Tyr Leu Trp Phe Tyr Met Leu Arg
100 105 110

Ala Ala Thr Ser Thr Leu Ser Val Cys Asp Phe Leu Gly Glu Lys Ile
115 120 125

Ala Ser Val Leu Gly Ile Ser Thr Pro Lys Tyr Gln Tyr Ala Ile Asp
130 135 140

Glu Tyr Tyr Arg Met Lys Lys Glu Glu Glu Glu Glu Glu Glu Glu Asn
145 150 155 160

Arg Met Ser Glu Glu Ala Glu Lys Gln Tyr Gln Gln Asn Lys Leu Gln
165 170 175

Thr Asp Ser Ile Val Gln Thr Asp Gln Pro Glu Thr Val Ile Ser Ser
180 185 190

Ser Phe Val Asn Val Asn Phe Glu Met Glu Gly Asp Ser Glu Val Ile
195 200 205

Met Glu Ser Lys Gln Asn Pro Val Ser Val Pro Pro
210 215 220

<210> 995
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (23)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 995
Lys Ile Gln Gly Pro Glu Leu Trp Lys Leu Gln Ala Lys Gly Met Gly
1 5 10 15

Leu Gly Leu Ser Cys Val Xaa Ile Leu Ile Arg Lys Gly Tyr Ala His
20 25 30

Thr Leu Ala Cys Ser Asp Ser Lys Thr Glu Gly Phe Thr Arg Pro Thr
35 40 45

Pro Gly Lys Trp Ala Ser Leu Pro Pro Met Leu Ser Phe Asn Leu Cys
50 55 60

Asn Leu Pro Val Ser Ile Gly Gly His Leu Thr Pro Ser Lys Glu Pro
65 70 75 80

Ser Leu Phe Cys Pro Leu Pro Cys Thr Val Phe Leu Cys Ile Ser Pro
85 90 95

Ser Trp Ala Leu Phe Tyr Ser His Leu Gly Leu
100 105

<210> 996
<211> 146
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (13)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (16)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 996
Thr Ile Gln Pro Arg Arg Ser Pro Ser Thr Arg Phe Xaa Xaa Asn Xaa
1 5 10 15

Ser Leu Val Gln Glu Asn Leu Tyr Phe Gln Arg Cys Leu Asp Trp Asn
20 25 30

Arg Asp Ile Leu Lys Lys Glu Leu Gly Leu Thr Glu Gln Asp Ile Ile
35 40 45

Asp Leu Pro Ala Leu Phe Lys Met Asp Glu Asp His Arg Ala Arg Ala
50 55 60

Phe Phe Pro Asn Met Val Asn Met Ile Val Leu Asp Lys Asp Leu Gly
65 70 75 80

Ile Pro Lys Pro Phe Gly Pro Gln Val Glu Glu Glu Cys Cys Leu Glu
85 90 95

Met His Val Arg Gly Leu Leu Glu Pro Leu Gly Leu Glu Cys Thr Phe

100 105 110

Ile Asp Asp Ile Ser Ala Tyr His Lys Phe Leu Gly Glu Val His Cys
115 120 125

Gly Thr Asn Val Arg Arg Lys Pro Phe Thr Phe Lys Trp Trp His Met
130 135 140

Val Pro
145

<210> 997
<211> 123
<212> PRT
<213> Homo sapiens

<400> 997
Leu Thr Gln Lys Ala Thr Leu Leu Phe Leu Val Lys Met Ala Gly Lys
1 5 10 15

Gln Ala Val Ser Ala Ser Gly Lys Trp Leu Asp Gly Ile Arg Lys Trp
20 25 30

Tyr Tyr Asn Ala Ala Gly Phe Asn Lys Leu Gly Leu Met Arg Asp Asp
35 40 45

Thr Ile Tyr Glu Asp Glu Asp Val Lys Glu Ala Ile Arg Arg Leu Pro
50 55 60

Glu Asn Leu Tyr Asn Asp Arg Met Phe Arg Ile Lys Arg Ala Leu Asp
65 70 75 80

Leu Asn Leu Lys His Gln Ile Leu Pro Lys Glu Gln Trp Thr Lys Tyr
85 90 95

Glu Glu Glu Asn Phe Tyr Leu Glu Pro Tyr Leu Lys Glu Val Ile Arg
100 105 110

Glu Arg Lys Glu Arg Glu Glu Trp Ala Lys Lys
115 120

<210> 998
<211> 762
<212> PRT
<213> Homo sapiens

<400> 998

His Gly Leu Thr Arg Asp Ser Ser Glu Gln Gly Arg Thr Gly Asp Thr
1 5 10 15

Leu Gly Arg Pro Ser Ala Cys Met Asp Ala Leu Lys Pro Pro Cys Leu
20 25 30

Trp Arg Asn His Glu Arg Gly Lys Lys Asp Arg Asp Ser Cys Gly Arg
35 40 45

Lys Asn Ser Glu Pro Gly Ser Pro His Ser Leu Glu Ala Leu Arg Asp
50 55 60

Ala Ala Pro Ser Gln Gly Leu Asn Phe Leu Leu Leu Phe Thr Lys Met
65 70 75 80

Leu Phe Ile Phe Asn Phe Leu Phe Ser Pro Leu Pro Thr Pro Ala Leu
85 90 95

Ile Cys Ile Leu Thr Phe Gly Ala Ala Ile Phe Leu Trp Leu Ile Thr
100 105 110

Arg Pro Gln Pro Val Leu Pro Leu Leu Asp Leu Asn Asn Gln Ser Val
115 120 125

Gly Ile Glu Gly Gly Ala Arg Lys Gly Val Ser Gln Lys Asn Asn Asp
130 135 140

Leu Thr Ser Cys Cys Phe Ser Asp Ala Lys Thr Met Tyr Glu Val Phe
145 150 155 160

Gln Arg Gly Leu Ala Val Ser Asp Asn Gly Pro Cys Leu Gly Tyr Arg
165 170 175

Lys Pro Asn Gln Pro Tyr Arg Trp Leu Ser Tyr Lys Gln Val Ser Asp
180 185 190

Arg Ala Glu Tyr Leu Gly Ser Cys Leu Leu His Lys Gly Tyr Lys Ser
195 200 205

Ser Pro Asp Gln Phe Val Gly Ile Phe Ala Gln Asn Arg Pro Glu Trp
210 215 220

Ile Ile Ser Glu Leu Ala Cys Tyr Thr Tyr Ser Met Val Ala Val Pro
225 230 235 240

Leu Tyr Asp Thr Leu Gly Pro Glu Ala Ile Val His Ile Val Asn Lys
245 250 255

Ala Asp Ile Ala Met Val Ile Cys Asp Thr Pro Gln Lys Ala Leu Val
260 265 270

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Leu Ile Gly Asn Val Glu Lys Gly Phe Thr Pro Ser Leu Lys Val Ile
        275                 280                 285

Ile Leu Met Asp Pro Phe Asp Asp Asp Leu Lys Gln Arg Gly Glu Lys
    290                 295                 300

Ser Gly Ile Glu Ile Leu Ser Leu Tyr Asp Ala Glu Asn Leu Gly Lys
305                 310                 315                 320

Glu His Phe Arg Lys Pro Val Pro Pro Ser Pro Glu Asp Leu Ser Val
                325                 330                 335

Ile Cys Phe Thr Ser Gly Thr Thr Gly Asp Pro Lys Gly Ala Met Ile
            340                 345                 350

Thr His Gln Asn Ile Val Ser Asn Ala Ala Ala Phe Leu Lys Cys Val
        355                 360                 365

Glu His Ala Tyr Glu Pro Thr Pro Asp Asp Val Ala Ile Ser Tyr Leu
    370                 375                 380

Pro Leu Ala His Met Phe Glu Arg Ile Val Gln Ala Val Val Tyr Ser
385                 390                 395                 400

Cys Gly Ala Arg Val Gly Phe Phe Gln Gly Asp Ile Arg Leu Leu Ala
                405                 410                 415

Asp Asp Met Lys Thr Leu Lys Pro Thr Leu Phe Pro Ala Val Pro Arg
            420                 425                 430

Leu Leu Asn Arg Ile Tyr Asp Lys Val Gln Asn Glu Ala Lys Thr Pro
        435                 440                 445

Leu Lys Lys Phe Leu Leu Lys Leu Ala Val Ser Ser Lys Phe Lys Glu
    450                 455                 460

Leu Gln Lys Gly Ile Ile Arg His Asp Ser Phe Trp Asp Lys Leu Ile
465                 470                 475                 480

Phe Ala Lys Ile Gln Asp Ser Leu Gly Gly Arg Val Arg Val Ile Val
                485                 490                 495

Thr Gly Ala Ala Pro Met Ser Thr Ser Val Met Thr Phe Phe Arg Ala
            500                 505                 510

Ala Met Gly Cys Gln Val Tyr Glu Ala Tyr Gly Gln Thr Glu Cys Thr
        515                 520                 525

Gly Gly Cys Thr Phe Thr Leu Pro Gly Asp Trp Thr Ser Gly His Val
    530                 535                 540
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Gly Val Pro Leu Ala Cys Asn Tyr Val Lys Leu Glu Asp Val Ala Asp
545 550 555 560

Met Asn Tyr Phe Thr Val Asn Asn Glu Gly Glu Val Cys Ile Lys Gly
565 570 575

Thr Asn Val Phe Lys Gly Tyr Leu Lys Asp Pro Glu Lys Thr Gln Glu
580 585 590

Ala Leu Asp Ser Asp Gly Trp Leu His Thr Gly Asp Ile Gly Arg Trp
595 600 605

Leu Pro Asn Gly Thr Leu Lys Ile Ile Asp Arg Lys Lys Asn Ile Phe
610 615 620

Lys Leu Ala Gln Gly Glu Tyr Ile Ala Pro Glu Lys Ile Glu Asn Ile
625 630 635 640

Tyr Asn Arg Ser Gln Pro Val Leu Gln Ile Phe Val His Gly Glu Ser
645 650 655

Leu Arg Ser Ser Leu Val Gly Val Val Val Pro Asp Thr Asp Val Leu
660 665 670

Pro Ser Phe Ala Ala Lys Leu Gly Val Lys Gly Ser Phe Glu Glu Leu
675 680 685

Cys Gln Asn Gln Val Val Arg Glu Ala Ile Leu Glu Asp Leu Gln Lys
690 695 700

Ile Gly Lys Glu Ser Gly Leu Lys Thr Phe Glu Gln Val Lys Ala Ile
705 710 715 720

Phe Leu His Pro Glu Pro Phe Ser Ile Glu Asn Gly Leu Leu Thr Pro
725 730 735

Thr Leu Lys Ala Lys Arg Gly Glu Leu Ser Lys Tyr Phe Arg Thr Gln
740 745 750

Ile Asp Ser Leu Tyr Glu His Ile Gln Asp
755 760

<210> 999
<211> 130
<212> PRT
<213> Homo sapiens

<400> 999
Thr Asn Val Asp Lys Leu Val Lys Asp Ile Tyr Gly Gly Asp Tyr Glu

1 5 10 15

Arg Phe Gly Leu Gln Gly Ser Ala Val Ala Ser Ser Phe Gly Asn Met
20 25 30

Met Ser Lys Glu Lys Arg Asp Ser Ile Ser Lys Glu Asp Leu Ala Arg
35 40 45

Ala Thr Leu Val Thr Ile Thr Asn Asn Ile Gly Ser Ile Ala Arg Met
50 55 60

Cys Ala Leu Asn Glu Asn Ile Asp Arg Val Val Phe Val Gly Asn Phe
65 70 75 80

Leu Arg Ile Asn Met Val Ser Met Lys Leu Leu Ala Tyr Ala Met Asp
85 90 95

Phe Trp Ser Lys Gly Gln Leu Lys Ala Leu Phe Leu Glu His Glu Gly
100 105 110

Tyr Phe Gly Ala Val Gly Ala Leu Leu Glu Leu Phe Lys Met Thr Asp
115 120 125

Asp Lys
130

<210> 1000
<211> 270
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (61)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (71)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1000
Gln Gln Asn Glu Ala Lys Ile Lys Gly Val Ser Lys Gly Arg Asn Ile
1 5 10 15

Cys Val Val Cys Cys Gln His Lys Met Glu Glu Leu Lys Glu Gly Leu
20 25 30

Arg Gln Arg Asp Glu Leu Ile Glu Glu Lys Gln Arg Met Gln Gln Lys

```
        35                  40                  45

Ile Asp Thr Met Thr Lys Glu Val Phe Asp Leu Gln Xaa Thr Leu Leu
    50                  55                  60

Trp Lys Asp Lys Lys Ile Xaa Lys His Gly Leu Val Ile Ile Pro Asp
65                  70                  75                  80

Gly Thr Pro Asn Gly Asp Val Ser His Glu Pro Val Ala Gly Ala Ile
                85                  90                  95

Thr Val Val Ser Gln Glu Ala Ala Gln Val Leu Glu Ser Ala Gly Glu
            100                 105                 110

Gly Pro Leu Asp Val Arg Leu Arg Lys Leu Ala Gly Glu Lys Glu Glu
        115                 120                 125

Leu Leu Ser Gln Ile Arg Lys Leu Lys Leu Gln Leu Glu Glu Glu Arg
    130                 135                 140

Gln Lys Cys Ser Arg Asn Asp Gly Thr Val Gly Asp Leu Ala Gly Leu
145                 150                 155                 160

Gln Asn Gly Ser Asp Leu Gln Phe Ile Glu Met Gln Arg Asp Ala Asn
                165                 170                 175

Arg Gln Ile Ser Glu Tyr Lys Phe Lys Leu Ser Lys Ala Glu Gln Asp
            180                 185                 190

Ile Thr Thr Leu Glu Gln Ser Ile Ser Arg Leu Glu Gly Gln Val Leu
        195                 200                 205

Arg Tyr Lys Thr Ala Ala Glu Asn Ala Glu Lys Val Glu Asp Glu Leu
    210                 215                 220

Lys Ala Glu Lys Arg Lys Leu Gln Arg Glu Leu Arg Thr Ala Leu Asp
225                 230                 235                 240

Lys Ile Glu Glu Met Glu Met Thr Asn Ser His Leu Ala Lys Arg Leu
                245                 250                 255

Glu Lys Met Lys Ala Asn Arg Thr Ala Leu Leu Ala Gln Gln
            260                 265                 270
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<210> 1001
<211> 124
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (110)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (111)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1001
Leu His Ser Gln Val Phe Pro Ala Leu Thr Pro Lys Arg Trp Thr Gln
1 5 10 15

Val Arg Arg Gly Thr Ala Thr Val Gly Gly Met Ala Ile Leu Gln Val
20 25 30

Thr Ala Gly His Pro Leu Ala Met Ala Gln Gly Pro Ala Gly His Pro
35 40 45

Pro Thr Met Ala Gln Gly Pro Ala Gly His Pro Pro Thr Met Val Gln
50 55 60

Gly Pro Ala Gly His Pro Leu Ala Met Ala Gln Gly Pro Ala Gly His
65 70 75 80

Pro Pro Thr Met Val Gln Gly Pro Ala Gly Leu Pro Leu Ala Met Ala
85 90 95

Gln Val Thr His Pro Leu Val His Ile Thr Glu Glu Val Xaa Xaa Asn
100 105 110

Arg Thr Gln Asp Gly Lys Pro Glu Arg Asn Cys Pro
115 120

<210> 1002
<211> 647
<212> PRT
<213> Homo sapiens

<400> 1002
Thr Ile Gln Ile Val Asn Met Gly Arg Arg Ser Thr Ser Ser Thr Lys
1 5 10 15

Ser Gly Lys Phe Met Asn Pro Thr Asp Gln Ala Arg Lys Glu Ala Arg
20 25 30

Lys Arg Glu Leu Lys Lys Asn Lys Lys Gln Arg Met Met Val Arg Ala
35 40 45

Ala Val Leu Lys Met Lys Asp Pro Lys Gln Ile Ile Arg Asp Met Glu
50 55 60

Lys Leu Asp Glu Met Glu Phe Asn Pro Val Gln Gln Pro Gln Leu Asn
65 70 75 80

Glu Lys Val Leu Lys Asp Lys Arg Lys Lys Leu Arg Glu Thr Phe Glu
85 90 95

Arg Ile Leu Arg Leu Tyr Glu Lys Glu Asn Pro Asp Ile Tyr Lys Glu
100 105 110

Leu Arg Lys Leu Glu Val Glu Tyr Glu Gln Lys Arg Ala Gln Leu Ser
115 120 125

Gln Tyr Phe Asp Ala Val Lys Asn Ala Gln His Val Glu Val Glu Ser
130 135 140

Ile Pro Leu Pro Asp Met Pro His Ala Pro Ser Asn Ile Leu Ile Gln
145 150 155 160

Asp Ile Pro Leu Pro Gly Ala Gln Pro Pro Ser Ile Leu Lys Lys Thr
165 170 175

Ser Ala Tyr Gly Pro Pro Thr Arg Ala Val Ser Ile Leu Pro Leu Leu
180 185 190

Gly His Gly Val Pro Arg Leu Pro Pro Gly Arg Lys Pro Pro Gly Pro
195 200 205

Pro Pro Gly Pro Pro Pro Pro Gln Val Val Gln Met Tyr Gly Arg Lys
210 215 220

Val Gly Phe Ala Leu Asp Leu Pro Pro Arg Arg Arg Asp Glu Asp Met
225 230 235 240

Leu Tyr Ser Pro Glu Leu Ala Gln Arg Gly His Asp Asp Asp Val Ser
245 250 255

Ser Thr Ser Glu Asp Asp Gly Tyr Pro Glu Asp Met Asp Gln Asp Lys
260 265 270

His Asp Asp Ser Thr Asp Asp Ser Asp Thr Asp Lys Ser Asp Gly Glu
275 280 285

Ser Asp Gly Asp Glu Phe Val His Arg Asp Asn Gly Glu Arg Asp Asn
290 295 300

Asn Glu Glu Lys Lys Ser Gly Leu Ser Val Arg Phe Ala Asp Met Pro
305 310 315 320

Gly Lys Ser Arg Lys Lys Lys Lys Asn Met Lys Glu Leu Thr Pro Leu
325 330 335

Gln Ala Met Met Leu Arg Met Ala Gly Gln Glu Ile Pro Glu Glu Gly
340 345 350

Arg Glu Val Glu Glu Phe Ser Glu Asp Asp Asp Glu Asp Asp Ser Asp
355 360 365

Asp Ser Glu Ala Glu Lys Gln Ser Gln Lys Gln His Lys Glu Glu Ser
370 375 380

His Ser Asp Gly Thr Ser Thr Ala Ser Ser Gln Gln Gln Ala Pro Pro
385 390 395 400

Gln Ser Val Pro Pro Ser Gln Ile Gln Ala Pro Pro Met Pro Gly Pro
405 410 415

Pro Pro Leu Gly Pro Pro Pro Ala Pro Pro Leu Arg Pro Pro Gly Pro
420 425 430

Pro Thr Gly Leu Pro Pro Gly Pro Pro Pro Gly Ala Pro Pro Phe Leu
435 440 445

Arg Pro Pro Gly Met Pro Gly Leu Arg Gly Pro Leu Pro Arg Leu Leu
450 455 460

Pro Pro Gly Pro Pro Pro Gly Arg Pro Pro Gly Pro Pro Pro Gly Pro
465 470 475 480

Pro Pro Gly Leu Pro Pro Gly Pro Pro Pro Arg Gly Pro Pro Pro Arg
485 490 495

Leu Pro Pro Pro Ala Pro Pro Gly Ile Pro Pro Pro Arg Pro Gly Met
500 505 510

Met Arg Pro Pro Leu Val Pro Pro Leu Gly Pro Ala Pro Pro Gly Leu
515 520 525

Phe Pro Pro Ala Pro Leu Pro Asn Pro Gly Val Leu Ser Ala Pro Pro
530 535 540

Asn Leu Ile Gln Arg Pro Lys Ala Asp Asp Thr Ser Ala Ala Thr Ile
545 550 555 560

Glu Lys Lys Ala Thr Ala Thr Ile Ser Ala Lys Pro Gln Ile Thr Asn
565 570 575

Pro Lys Ala Glu Ile Thr Arg Phe Val Pro Thr Ala Leu Arg Val Arg
580 585 590

Arg Glu Asn Lys Gly Ala Thr Ala Ala Pro Gln Arg Lys Ser Glu Asp
595 600 605

Asp Ser Ala Val Pro Leu Ala Lys Ala Ala Pro Lys Ser Gly Pro Ser
610 615 620

Val Pro Val Ser Val Gln Thr Lys Asp Asp Val Tyr Glu Ala Phe Met
625 630 635 640

Lys Glu Met Glu Gly Leu Leu
645

<210> 1003
<211> 342
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (109)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (251)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (253)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1003
Leu Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys
1 5 10 15

Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
20 25 30

Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
35 40 45

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
50 55 60

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
65 70 75 80

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn
85 90 95

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Xaa Val Glu Pro
100 105 110

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
115 120 125

Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
130 135 140

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
145 150 155 160

Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
165 170 175

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
180 185 190

Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
195 200 205

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
210 215 220

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
225 230 235 240

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Xaa Glu Xaa Thr Lys Asn
245 250 255

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
260 265 270

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
275 280 285

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
290 295 300

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
305 310 315 320

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
325 330 335

Ser Leu Ser Pro Gly Lys
340

<210> 1004
<211> 544
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (27)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (531)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1004
Arg Leu Pro Pro Ala Ser Ala Thr Ala Arg Arg Pro Arg Pro Ser Ser
1 5 10 15

Ala Leu Cys Cys Pro Arg Ser Arg Arg Arg Xaa Gly Gln Arg Pro Gly
20 25 30

Ala Ala Gln Gly Cys His Pro Arg Arg Phe Pro Lys Lys Ala Ser Arg
35 40 45

Thr Ala Arg Ile Ala Ser Asp Glu Glu Ile Gln Gly Thr Lys Asp Ala
50 55 60

Val Ile Gln Asp Leu Glu Arg Lys Leu Arg Phe Lys Glu Asp Leu Leu
65 70 75 80

Asn Asn Gly Gln Pro Arg Leu Thr Tyr Glu Glu Arg Met Ala Arg Arg
85 90 95

Leu Leu Gly Ala Asp Ser Ala Thr Val Phe Asn Ile Gln Glu Pro Glu
100 105 110

Glu Glu Thr Ala Asn Gln Glu Tyr Lys Val Ser Ser Cys Glu Gln Arg
115 120 125

Leu Ile Ser Glu Ile Glu Tyr Arg Leu Glu Arg Ser Pro Val Asp Glu
130 135 140

Ser Gly Asp Glu Val Gln Tyr Gly Asp Val Pro Val Glu Asn Gly Met
145 150 155 160

Ala Pro Phe Phe Glu Met Lys Leu Lys His Tyr Lys Ile Phe Glu Gly
165 170 175

Met Pro Val Thr Phe Thr Cys Arg Val Ala Gly Asn Pro Lys Pro Lys
180 185 190

Ile Tyr Trp Phe Lys Asp Gly Lys Gln Ile Ser Pro Lys Ser Asp His
195 200 205

Tyr Thr Ile Gln Arg Asp Leu Asp Gly Thr Cys Ser Leu His Thr Thr
210 215 220

Ala Ser Thr Leu Asp Asp Asp Gly Asn Tyr Thr Ile Met Ala Ala Asn
225 230 235 240

Pro Gln Gly Arg Ile Ser Cys Thr Gly Arg Leu Met Val Gln Ala Val
245 250 255

Asn Gln Arg Gly Arg Ser Pro Arg Ser Pro Ser Gly His Pro His Val
260 265 270

Arg Arg Pro Arg Ser Arg Ser Arg Asp Ser Gly Asp Glu Asn Glu Pro
275 280 285

Ile Gln Glu Arg Phe Phe Arg Pro His Phe Leu Gln Ala Pro Gly Asp
290 295 300

Leu Thr Val Gln Glu Gly Lys Leu Cys Arg Met Asp Cys Lys Val Ser
305 310 315 320

Gly Leu Pro Thr Pro Asp Leu Ser Trp Gln Leu Asp Gly Lys Pro Val
325 330 335

Arg Pro Asp Ser Ala His Lys Met Leu Val Arg Glu Asn Gly Val His
340 345 350

Ser Leu Ile Ile Glu Pro Val Thr Ser Arg Asp Ala Gly Ile Tyr Thr
355 360 365

Cys Ile Ala Thr Asn Arg Ala Gly Gln Asn Ser Phe Ser Leu Glu Leu
370 375 380

Val Val Ala Ala Lys Glu Ala His Lys Pro Pro Val Phe Ile Glu Lys
385 390 395 400

Leu Gln Asn Thr Gly Val Ala Asp Gly Tyr Pro Val Arg Leu Glu Cys
405 410 415

Arg Val Leu Gly Val Pro Pro Pro Gln Ile Phe Trp Lys Lys Glu Asn
420 425 430

Glu Ser Leu Thr His Ser Thr Asp Arg Val Ser Met His Gln Asp Asn
435 440 445

His Gly Tyr Ile Cys Leu Leu Ile Gln Gly Ala Thr Lys Glu Asp Ala
450 455 460

Gly Trp Tyr Thr Val Ser Ala Lys Asn Glu Ala Gly Ile Val Ser Cys
465 470 475 480

Thr Ala Arg Leu Asp Val Tyr Thr Gln Trp His Gln Gln Ser Gln Ser
485 490 495

Thr Lys Pro Lys Lys Val Arg Pro Ser Ala Ser Arg Tyr Ala Ala Leu
500 505 510

Ser Asp Gln Gly Leu Asp Ile Lys Ala Ala Phe Gln Pro Glu Ala Asn
515 520 525

Pro Ser Xaa Leu Thr Leu Asn Thr Ala Leu Val Glu Ser Glu Asp Leu
530 535 540

<210> 1005
<211> 194
<212> PRT
<213> Homo sapiens

<400> 1005
Ala Ala Pro Gln Pro Thr Pro Glu Glu Arg Pro Ala Gly Val Arg Arg
1 5 10 15

Ala Gln Glu Leu Gly Met Ser Tyr Lys Pro Ile Ala Pro Ala Pro Ser
20 25 30

Ser Thr Pro Gly Ser Ser Thr Pro Gly Pro Gly Thr Pro Val Pro Thr
35 40 45

Gly Ser Val Pro Ser Pro Ser Gly Ser Val Pro Gly Ala Gly Ala Pro
50 55 60

Phe Arg Pro Leu Phe Asn Asp Phe Gly Pro Pro Ser Met Gly Tyr Val
65 70 75 80

Gln Ala Met Lys Pro Pro Gly Ala Gln Gly Ser Gln Ser Thr Tyr Thr
85 90 95

Asp Leu Leu Ser Val Ile Glu Glu Met Gly Lys Glu Ile Arg Pro Thr
100 105 110

Tyr Ala Gly Ser Lys Ser Ala Met Glu Arg Leu Lys Arg Gly Ser Ala

115 120 125

Ser Ala Ser Ala Ser Gly Pro Ile Arg Pro Leu Gln Ser Thr Arg Phe
130 135 140

Ser Leu Ala Phe Ile Pro Ser Cys Thr Asn His Pro Gly Leu Pro Val
145 150 155 160

Leu Cys Pro Leu Val Gly Pro Leu Gln Glu Pro Arg Ser Gly Pro Pro
165 170 175

Gly Gly Ser Thr Lys Asp Thr Pro Pro Gln Gln Glu Leu Ala Ala Arg
180 185 190

Ser Pro

<210> 1006
<211> 312
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (105)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (220)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (222)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (231)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (244)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (298)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (299)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (309)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1006

```
Ala Val Arg Leu Pro Ala Ala Tyr Ile Lys Ala Pro Gly His Ala Glu
  1               5                  10                  15

Pro Ser Ser Arg Thr Arg Pro Thr Thr Met Arg Ser Cys Leu Trp Arg
             20                  25                  30

Cys Arg His Leu Ser Gln Gly Val Gln Trp Ser Leu Leu Leu Ala Val
         35                  40                  45

Leu Val Phe Phe Leu Phe Ala Leu Pro Ser Phe Ile Lys Glu Pro Gln
     50                  55                  60

Thr Lys Pro Ser Arg His Gln Arg Thr Glu Asn Ile Lys Glu Arg Ser
 65                  70                  75                  80

Leu Gln Ser Leu Ala Lys Pro Lys Ser Gln Ala Pro Thr Arg Ala Arg
                 85                  90                  95

Arg Thr Thr Ile Tyr Ala Glu Pro Xaa Pro Glu Asn Asn Ala Leu Asn
            100                 105                 110

Thr Gln Thr Gln Pro Lys Ala His Thr Thr Gly Asp Arg Gly Lys Glu
        115                 120                 125

Ala Asn Gln Ala Pro Pro Glu Glu Gln Asp Lys Val Pro His Thr Ala
    130                 135                 140

Gln Arg Ala Ala Trp Lys Ser Pro Glu Lys Glu Lys Thr Met Val Asn
145                 150                 155                 160

Thr Leu Ser Pro Arg Gly Gln Asp Ala Gly Met Ala Ser Gly Arg Thr
                165                 170                 175

Glu Ala Gln Ser Trp Lys Ser Gln Asp Thr Lys Thr Thr Gln Gly Asn
            180                 185                 190

Gly Gly Gln Thr Arg Lys Leu Thr Ala Ser Arg Thr Val Ser Glu Lys
```

195 200 205

His Gln Gly Lys Ala Ala Thr Thr Ala Lys Thr Xaa Ile Xaa Lys Ser
210 215 220

Gln His Arg Met Leu Ala Xaa Thr Gly Ala Val Ser Thr Arg Thr Arg
225 230 235 240

Gln Lys Gly Xaa Thr Thr Ala Val Ile Pro Pro Lys Glu Lys Lys Pro
245 250 255

Gln Ala Thr Pro Pro Pro Ala Pro Phe Gln Ser Pro Thr Thr Gln Arg
260 265 270

Asn Gln Arg Leu Lys Gly Gly Asn Phe Lys Ser Glu Pro Arg Trp Asp
275 280 285

Phe Glu Glu Lys Tyr Lys Leu Arg Asn Xaa Xaa Ala Ser Asp Asp Leu
290 295 300

Ala Leu Thr Leu Xaa Arg Ser Lys
305 310

<210> 1007
<211> 365
<212> PRT
<213> Homo sapiens

<400> 1007
Pro Glu Pro Ala Met Ala Leu Pro His Arg Arg Leu Ser Pro Trp Leu
1 5 10 15

Arg Gln Arg His Gln Gly Pro Gly Gln Val Cys Gly Pro Gln Ala Ala
20 25 30

Glu His Asp Arg Arg Asp Ala Gly Cys Thr Ala Asp Leu Leu Val Gly
35 40 45

Arg Ala Met Thr Phe His Gly His Gly Phe Leu Arg Leu Ala Leu Ser
50 55 60

Asn Val Ala Pro Leu Thr Gly Asn Val Tyr Ser Gly Phe Gly Phe His
65 70 75 80

Ser Ala Gln Asp Ser Ala Leu Leu Tyr Tyr Arg Ala Ser Pro Asp Gly
85 90 95

Leu Cys Gln Val Ser Leu Gln Gln Gly Arg Val Ser Leu Gln Leu Leu
100 105 110

```
Arg Thr Glu Val Lys Thr Gln Ala Gly Phe Ala Asp Gly Ala Pro His
        115                 120                 125

Tyr Val Ala Phe Tyr Ser Asn Ala Thr Gly Val Trp Leu Tyr Val Asp
    130                 135                 140

Asp Gln Leu Gln Gln Met Lys Pro His Arg Gly Pro Pro Pro Glu Leu
145                 150                 155                 160

Gln Pro Gln Pro Glu Gly Pro Pro Arg Leu Leu Leu Gly Gly Leu Pro
                165                 170                 175

Glu Ser Gly Thr Ile Tyr Asn Phe Ser Gly Cys Ile Ser Asn Val Phe
            180                 185                 190

Val Gln Arg Leu Leu Gly Pro Gln Arg Val Phe Asp Leu Gln Gln Asn
        195                 200                 205

Leu Gly Ser Val Asn Val Ser Thr Gly Cys Ala Pro Ala Leu Gln Ala
    210                 215                 220

Gln Thr Pro Gly Leu Gly Pro Arg Gly Leu Gln Ala Thr Ala Arg Lys
225                 230                 235                 240

Ala Ser Arg Arg Ser Arg Gln Pro Ala Arg His Pro Ala Cys Met Leu
                245                 250                 255

Pro Pro His Leu Arg Thr Thr Arg Asp Ser Tyr Gln Phe Gly Gly Ser
            260                 265                 270

Leu Ser Ser His Leu Glu Phe Val Gly Ile Leu Ala Arg His Arg Asn
        275                 280                 285

Trp Pro Ser Leu Ser Met His Val Leu Pro Arg Ser Ser Arg Gly Leu
    290                 295                 300

Leu Leu Phe Thr Ala Arg Leu Arg Pro Gly Ser Pro Ser Leu Ala Leu
305                 310                 315                 320

Phe Leu Ser Asn Gly His Phe Val Ala Gln Met Glu Gly Leu Gly Thr
                325                 330                 335

Arg Leu Arg Ala Gln Ser Arg Gln Arg Ser Arg Pro Gly Ala Gly Thr
            340                 345                 350

Arg Ser Pro Cys Ala Gly Arg Arg Thr Gly Ser Cys Trp
        355                 360                 365
```

<210> 1008
<211> 196
<212> PRT
<213> Homo sapiens

<400> 1008
Ala Thr Pro Pro Pro Pro Glu Gln Ala Met Val Ala Ala Thr Val Ala
1 5 10 15

Ala Ala Trp Leu Leu Leu Trp Ala Ala Ala Cys Ala Gln Gln Glu Gln
20 25 30

Asp Phe Tyr Asp Phe Lys Ala Val Asn Ile Arg Gly Lys Leu Val Ser
35 40 45

Leu Glu Lys Tyr Arg Gly Ser Val Ser Leu Val Val Asn Val Ala Ser
50 55 60

Glu Cys Gly Phe Thr Asp Gln His Tyr Arg Ala Leu Gln Gln Leu Gln
65 70 75 80

Arg Asp Leu Gly Pro His His Phe Asn Val Leu Ala Phe Pro Cys Asn
85 90 95

Gln Phe Gly Gln Gln Glu Pro Asp Ser Asn Lys Glu Ile Glu Ser Phe
100 105 110

Ala Arg Arg Thr Tyr Ser Val Ser Phe Pro Met Phe Ser Lys Ile Ala
115 120 125

Val Thr Gly Thr Gly Ala His Pro Ala Phe Lys Tyr Leu Ala Gln Thr
130 135 140

Ser Gly Lys Glu Pro Thr Trp Asn Phe Trp Lys Tyr Leu Val Ala Pro
145 150 155 160

Asp Gly Lys Val Val Gly Ala Trp Asp Pro Thr Val Ser Val Glu Glu
165 170 175

Val Arg Pro Gln Ile Thr Ala Leu Val Arg Lys Leu Ile Leu Leu Lys
180 185 190

Arg Glu Asp Leu
195

<210> 1009
<211> 227
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (156)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (196)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (204)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (210)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (212)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (215)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (220)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (222)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1009
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Asp Pro Arg Val Arg Ala Ala Ala Ala Gly Pro Met Ala Asp Thr Gln
  1               5                  10                  15

Tyr Ile Leu Pro Asn Asp Ile Gly Val Ser Ser Leu Asp Cys Arg Glu
             20                  25                  30

Ala Phe Arg Leu Leu Ser Pro Thr Glu Arg Leu Tyr Ala Tyr His Leu
         35                  40                  45
```

Ser Arg Ala Ala Trp Tyr Gly Gly Leu Ala Val Leu Leu Gln Thr Ser
50 55 60

Pro Glu Ala Pro Tyr Ile Tyr Ala Leu Leu Ser Arg Leu Phe Arg Ala
65 70 75 80

Gln Asp Pro Asp Gln Leu Arg Gln His Ala Leu Ala Glu Gly Leu Thr
85 90 95

Glu Glu Glu Tyr Gln Ala Phe Leu Val Tyr Ala Ala Gly Val Tyr Ser
100 105 110

Asn Met Gly Asn Tyr Lys Ser Phe Gly Asp Thr Lys Phe Val Pro Asn
115 120 125

Leu Pro Lys Glu Lys Leu Glu Arg Val Ile Leu Gly Ser Glu Ala Ala
130 135 140

Gln Gln His Pro Glu Glu Val Arg Gly Leu Trp Xaa Thr Cys Gly Glu
145 150 155 160

Leu Met Phe Ser Leu Glu Pro Arg Leu Arg His Leu Gly Leu Gly Lys
165 170 175

Glu Gly Ile Thr Thr Tyr Phe Ser Gly Asn Cys Thr Met Glu Asp Ala
180 185 190

Lys Leu Ala Xaa Ile Ser Gly Leu Thr Glu Pro Xaa Cys Leu Gln Gln
195 200 205

Pro Xaa Leu Xaa Arg Ser Xaa Trp Glu Lys Gly Xaa Pro Xaa Thr Lys
210 215 220

Val Arg Val
225

<210> 1010
<211> 344
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (31)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1010
Asp Pro Ala Ser Asn Met Trp Gln Leu Trp Ala Ser Leu Cys Cys Leu
1 5 10 15

Leu Val Leu Ala Asn Ala Arg Ser Arg Pro Ser Phe His Pro Xaa Ser
20 25 30

Asp Glu Leu Val Asn Tyr Val Asn Lys Arg Asn Thr Thr Trp Gln Ala
35 40 45

Gly His Asn Phe Tyr Asn Val Asp Met Ser Tyr Leu Lys Arg Leu Cys
50 55 60

Gly Thr Phe Leu Gly Gly Pro Lys Pro Pro Gln Arg Val Met Phe Thr
65 70 75 80

Glu Asp Leu Lys Leu Pro Ala Ser Phe Asp Ala Arg Glu Gln Trp Pro
85 90 95

Gln Cys Pro Thr Ile Lys Glu Ile Arg Asp Gln Gly Ser Cys Gly Ser
100 105 110

Cys Trp Ala Phe Gly Ala Val Glu Ala Ile Ser Asp Arg Ile Cys Ile
115 120 125

His Thr Asn Ala His Val Ser Val Glu Val Ser Ala Glu Asp Leu Leu
130 135 140

Thr Cys Cys Gly Ser Met Cys Gly Asp Gly Cys Asn Gly Gly Tyr Pro
145 150 155 160

Ala Glu Ala Trp Asn Phe Trp Thr Arg Lys Gly Leu Val Ser Gly Gly
165 170 175

Leu Tyr Glu Ser His Val Gly Cys Arg Pro Tyr Ser Ile Pro Pro Cys
180 185 190

Glu His His Val Asn Gly Ser Arg Pro Pro Cys Thr Gly Glu Gly Asp
195 200 205

Thr Pro Lys Cys Ser Lys Ile Cys Glu Pro Gly Tyr Ser Pro Thr Tyr
210 215 220

Lys Gln Asp Lys His Tyr Gly Tyr Asn Ser Tyr Ser Val Ser Asn Ser
225 230 235 240

Glu Lys Asp Ile Met Ala Glu Ile Tyr Lys Asn Gly Pro Val Glu Gly
245 250 255

Ala Phe Ser Val Tyr Ser Asp Phe Leu Leu Tyr Lys Ser Gly Val Tyr
260 265 270

Gln His Val Thr Gly Glu Met Met Gly Gly His Ala Ile Arg Ile Leu
275 280 285

Gly Trp Gly Val Glu Asn Gly Thr Pro Tyr Trp Leu Val Ala Asn Ser
290 295 300

Trp Asn Thr Asp Trp Gly Asp Asn Gly Phe Phe Lys Ile Leu Arg Gly
305 310 315 320

Gln Asp His Cys Gly Ile Glu Ser Glu Val Val Ala Gly Ile Pro Arg
325 330 335

Thr Asp Gln Tyr Trp Glu Lys Ile
340

<210> 1011
<211> 384
<212> PRT
<213> Homo sapiens

<400> 1011
Ala Gly Thr Arg Gly Pro Gly Ala His Ile Arg Pro Trp His Pro Asp
1 5 10 15

Val Ala Thr Met Leu Asn Ile Leu Ala Leu Val Tyr Arg Asp Gln Asn
20 25 30

Lys Tyr Lys Glu Ala Ala His Leu Leu Asn Asp Ala Leu Ser Ile Arg
35 40 45

Glu Ser Thr Leu Gly Pro Asp His Pro Ala Val Ala Ala Thr Leu Asn
50 55 60

Asn Leu Ala Val Leu Tyr Gly Lys Arg Gly Lys Tyr Lys Glu Ala Glu
65 70 75 80

Pro Leu Cys Gln Arg Ala Leu Glu Ile Arg Glu Lys Val Leu Gly Thr
85 90 95

Asn His Pro Asp Val Ala Lys Gln Leu Asn Asn Leu Ala Leu Leu Cys
100 105 110

Gln Asn Gln Gly Lys Tyr Glu Ala Val Glu Arg Tyr Tyr Gln Arg Ala
115 120 125

Leu Ala Ile Tyr Glu Gly Gln Leu Gly Pro Asp Asn Pro Asn Val Ala
130 135 140

Arg Thr Lys Asn Asn Leu Ala Ser Cys Tyr Leu Lys Gln Gly Lys Tyr
145 150 155 160

Ala Glu Ala Glu Thr Leu Tyr Lys Glu Ile Leu Thr Arg Ala His Val
165 170 175

Gln Glu Phe Gly Ser Val Asp Asp Asp His Lys Pro Ile Trp Met His
180 185 190

Ala Glu Glu Arg Glu Glu Met Ser Lys Ser Arg His His Glu Gly Gly
195 200 205

Thr Pro Tyr Ala Glu Tyr Gly Gly Trp Tyr Lys Ala Cys Lys Val Ser
210 215 220

Ser Pro Thr Val Asn Thr Thr Leu Arg Asn Leu Gly Ala Leu Tyr Arg
225 230 235 240

Arg Gln Gly Lys Leu Glu Ala Ala Glu Thr Leu Glu Glu Cys Ala Leu
245 250 255

Arg Ser Arg Arg Gln Gly Thr Asp Pro Ile Ser Gln Thr Lys Val Ala
260 265 270

Glu Leu Leu Gly Glu Ser Asp Gly Arg Arg Thr Ser Gln Glu Gly Pro
275 280 285

Gly Asp Ser Val Lys Phe Glu Gly Gly Glu Asp Ala Ser Val Ala Val
290 295 300

Glu Trp Ser Gly Asp Gly Ser Gly Thr Leu Gln Arg Ser Gly Ser Leu
305 310 315 320

Gly Lys Ile Arg Asp Val Leu Arg Arg Ser Ser Glu Leu Leu Val Arg
325 330 335

Lys Leu Gln Gly Thr Glu Pro Arg Pro Ser Ser Ser Asn Met Lys Arg
340 345 350

Ala Ala Ser Leu Asn Tyr Leu Asn Gln Pro Ser Ala Ala Pro Leu Gln
355 360 365

Val Ser Arg Gly Leu Ser Ala Ser Thr Met Asp Leu Ser Ser Ser Ser
370 375 380

<210> 1012
<211> 130
<212> PRT
<213> Homo sapiens

<400> 1012
Ala Asp Ala Trp Ala Trp Ser Gln Tyr Gly Ala Val Leu Gly Ser Tyr
1 5 10 15

Ser Pro Glu Pro Pro Thr Ser Ala Gly Ser Gln Ile Pro Leu Cys Ala
20 25 30

Asn Leu Val Pro Val Pro Ile Thr Asn Ala Thr Leu Asp Arg Ile Thr
35 40 45

Gly Lys Trp Phe Tyr Ile Ala Ser Ala Phe Arg Asn Glu Glu Tyr Asn
50 55 60

Lys Ser Val Gln Glu Ile Gln Ala Thr Phe Phe Tyr Phe Thr Pro Asn
65 70 75 80

Lys Thr Glu Asp Thr Ile Phe Leu Arg Glu Tyr Gln Thr Arg Gln Asn
85 90 95

Gln Cys Phe Tyr Asn Ser Ser Tyr Leu Asn Val Gln Arg Glu Asn Gly
100 105 110

Thr Val Ser Arg Tyr Glu Gly Gly Arg Glu Thr Cys Cys Ser Pro Ala
115 120 125

Val Pro
130

<210> 1013
<211> 25
<212> PRT
<213> Homo sapiens

<400> 1013
Lys Ile Leu Trp Pro Gly Val Val Ala His Ala Cys Asn Pro Ser Thr
1 5 10 15

Leu Gly Gly Arg Gly Gly Arg Ile Ala
20 25

<210> 1014
<211> 233
<212> PRT
<213> Homo sapiens

<220>

<221> SITE
<222> (44)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (56)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (71)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1014
Asn Cys Asn Leu Asn Pro Ala Ile His Phe Gly Phe Phe Leu Ser Asp
1 5 10 15

Thr Met Cys Gly Lys Leu Phe Cys Gln Gly Gly Ser Asp Asn Leu Pro
20 25 30

Trp Lys Gly Arg Ile Val Thr Phe Leu Thr Cys Xaa Thr Phe Asp Pro
35 40 45

Glu Asp Thr Ser Gln Glu Ile Xaa Met Val Ala Asn Gly Thr Lys Cys
50 55 60

Gly Asp Asn Lys Val Cys Xaa Asn Ala Glu Cys Val Asp Ile Glu Lys
65 70 75 80

Ala Tyr Lys Ser Thr Asn Cys Ser Ser Lys Cys Lys Gly His Ala Val
85 90 95

Cys Asp His Glu Leu Gln Cys Gln Cys Glu Glu Gly Trp Ile Pro Pro
100 105 110

Asp Cys Asp Asp Ser Ser Val Val Phe His Phe Ser Ile Val Val Gly
115 120 125

Val Leu Phe Pro Met Ala Val Ile Phe Val Val Val Ala Met Val Ile
130 135 140

Arg His Gln Ser Ser Arg Glu Lys Gln Lys Lys Asp Gln Arg Pro Leu
145 150 155 160

Ser Thr Thr Gly Thr Arg Pro His Lys Gln Lys Arg Lys Pro Gln Met
165 170 175

Val Lys Ala Val Gln Pro Gln Glu Met Ser Gln Met Lys Pro His Val
180 185 190

Tyr Asp Leu Pro Val Glu Gly Asn Glu Pro Pro Ala Ser Phe His Lys
195 200 205

Asp Thr Asn Ala Leu Pro Pro Thr Val Phe Lys Asp Asn Pro Met Ser
210 215 220

Thr Pro Lys Asp Ser Asn Pro Lys Ala
225 230

<210> 1015
<211> 573
<212> PRT
<213> Homo sapiens

<220>
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<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (28)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (179)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1015
His Glu Tyr Lys Val Ala Ala Leu Gly Leu Ala Thr Gly Xaa Val Leu
1 5 10 15

Val Leu Leu Leu Leu Cys Leu Tyr Arg Val Leu Xaa Pro Arg Asn Tyr
20 25 30

Gly Gln Leu Gly Gly Gly Pro Gly Arg Arg Arg Arg Gly Glu Leu Pro
35 40 45

Cys Asp Asp Tyr Gly Tyr Ala Pro Pro Glu Thr Glu Ile Val Pro Leu
50 55 60

Val Leu Arg Gly His Leu Met Asp Ile Glu Cys Leu Ala Ser Asp Gly
65 70 75 80

Met Leu Leu Val Ser Cys Cys Leu Ala Gly His Ile Cys Val Trp Asp
85 90 95

Ala Gln Thr Gly Asp Cys Leu Thr Arg Ile Pro Arg Pro Gly Arg Gln

100 105 110

Arg Arg Asp Ser Gly Val Gly Ser Gly Leu Glu Ala Gln Glu Ser Trp
115 120 125

Glu Arg Leu Ser Asp Gly Gly Lys Ala Gly Pro Glu Glu Pro Gly Asp
130 135 140

Ser Pro Pro Leu Arg His Arg Pro Arg Gly Pro Pro Pro Pro Ser Leu
145 150 155 160

Phe Gly Asp Gln Pro Asp Leu Thr Cys Leu Ile Asp Thr Asn Phe Ser
165 170 175

Ala Gln Xaa Arg Ser Ser Gln Pro Thr Gln Pro Glu Pro Arg His Arg
180 185 190

Ala Val Cys Gly Arg Ser Arg Asp Ser Pro Gly Tyr Asp Phe Ser Cys
195 200 205

Leu Val Gln Arg Val Tyr Gln Glu Glu Gly Leu Ala Ala Val Cys Thr
210 215 220

Pro Ala Leu Arg Pro Pro Ser Pro Gly Pro Val Leu Ser Gln Ala Pro
225 230 235 240

Glu Asp Glu Gly Gly Ser Pro Glu Lys Gly Ser Pro Ser Leu Ala Trp
245 250 255

Ala Pro Ser Ala Glu Gly Ser Ile Trp Ser Leu Glu Leu Gln Gly Asn
260 265 270

Leu Ile Val Val Gly Arg Ser Ser Gly Arg Leu Glu Val Trp Asp Ala
275 280 285

Ile Glu Gly Val Leu Cys Cys Ser Ser Glu Glu Val Ser Ser Gly Ile
290 295 300

Thr Ala Leu Val Phe Leu Asp Lys Arg Ile Val Ala Ala Arg Leu Asn
305 310 315 320

Gly Ser Leu Asp Phe Phe Ser Leu Glu Thr His Thr Ala Leu Ser Pro
325 330 335

Leu Gln Phe Arg Gly Thr Pro Gly Arg Gly Ser Ser Pro Ala Ser Pro
340 345 350

Val Tyr Ser Ser Ser Asp Thr Val Ala Cys His Leu Thr His Thr Val
355 360 365

Pro Cys Ala His Gln Lys Pro Ile Thr Ala Leu Lys Ala Ala Ala Gly

370 375 380

Arg Leu Val Thr Gly Ser Gln Asp His Thr Leu Arg Val Phe Arg Leu
385 390 395 400

Glu Asp Ser Cys Cys Leu Phe Thr Leu Gln Gly His Ser Gly Ala Ile
405 410 415

Thr Thr Val Tyr Ile Asp Gln Thr Met Val Leu Ala Ser Gly Gly Gln
420 425 430

Asp Gly Ala Ile Cys Leu Trp Asp Val Leu Thr Gly Ser Arg Val Ser
435 440 445

His Val Phe Ala His Arg Gly Asp Val Thr Ser Leu Thr Cys Thr Thr
450 455 460

Ser Cys Val Ile Ser Ser Gly Leu Asp Asp Leu Ile Ser Ile Trp Asp
465 470 475 480

Arg Ser Thr Gly Ile Lys Phe Tyr Ser Ile Gln Gln Asp Leu Gly Cys
485 490 495

Gly Ala Ser Leu Gly Val Ile Ser Asp Asn Leu Leu Val Thr Gly Gly
500 505 510

Gln Gly Cys Val Ser Phe Trp Asp Leu Asn Tyr Gly Asp Leu Leu Gln
515 520 525

Thr Val Tyr Leu Gly Lys Asn Ser Glu Ala Gln Pro Ala Arg Gln Ile
530 535 540

Leu Val Leu Asp Asn Ala Ala Ile Val Cys Asn Phe Gly Ser Glu Leu
545 550 555 560

Ser Leu Val Tyr Val Pro Ser Val Leu Glu Lys Leu Asp
565 570

<210> 1016
<211> 45
<212> PRT
<213> Homo sapiens

<400> 1016
Lys Phe Tyr Ser Tyr Ser Val Tyr Val Ala Gln Pro Gly Leu Glu Pro
1 5 10 15

Phe Gly Ser Ser Asp Pro Pro Ala Leu Ala Ser Gln Ser Ala Gly Ile
20 25 30

Thr Asp Gly Ser His Arg Val Trp Pro Ile Pro Ala Ser
35 40 45

<210> 1017
<211> 105
<212> PRT
<213> Homo sapiens

<400> 1017
Gly Lys Val His Gly Leu Ile Pro Gln Val Lys Asn Val Phe Thr Leu
1 5 10 15

Leu Ile Ala Val Ser Leu Tyr Leu Tyr Ile Arg Tyr Ile Ser Tyr Glu
20 25 30

His Lys Phe Val Val Lys Val Ser Ser Val Trp Ala Met Ala His Thr
35 40 45

Cys Asn Ser Asn Thr Leu Gly Gly Ser Gly Gly Arg Ile Ser Ser Pro
50 55 60

Gln Glu Phe Glu Thr Ser Leu Gly Asn Lys Leu Asp Pro Met Ser Leu
65 70 75 80

Lys Asn Val Lys Asn Ile Lys Arg Leu Ser Gln Glu Asp His Leu Ser
85 90 95

Leu Gly Val Gln Gly Cys Ser Lys Leu
100 105

<210> 1018
<211> 30
<212> PRT
<213> Homo sapiens

<400> 1018
Asn Pro Val Ser Thr Lys Asn Thr Lys Ile Ser Trp Val Trp Trp Trp
1 5 10 15

Ala Pro Val Val Pro Ala Thr Arg Glu Ala Glu Ala Gly Val
20 25 30

<210> 1019
<211> 72

<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (11)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (43)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1019
Pro Gly Trp Ser Arg Ser Pro Asp Leu Val Xaa Arg Ala Pro Arg Pro
1 5 10 15

Pro Lys Val Leu Gly Xaa Thr Gly Val Ser His Arg Ala Arg Pro Asp
20 25 30

Ser Leu Lys Ile Glu Glu Val Leu Pro Arg Xaa Ser Asp Leu Thr Gln
35 40 45

Met His Arg Pro Cys Ser Trp Tyr Leu Phe Ser Leu Cys Trp Gly Ala
50 55 60

Val Val Pro Ser Phe Leu Gly Gly
65 70

<210> 1020
<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1020
Ser Gln Leu Leu Gly Glu Ala Glu Ala Gly Glu Ser Leu Glu Pro Gly
1 5 10 15

Xaa Gly Asp Cys Ser Glu Pro Arg Ser His His Cys Thr Pro Val Trp

20 25 30

Pro Thr Glu Gln Asp Ser Ile Ser Lys Lys Lys Arg Lys Gly Asp Ser
35 40 45

Asp Leu Val Leu Leu Asn Thr Ser Phe
50 55

<210> 1021
<211> 18
<212> PRT
<213> Homo sapiens

<400> 1021
Val Ala Gly Ala Tyr Asn Pro Ser Tyr Ser Gly Gly Gln Gly Arg Arg
1 5 10 15

Ile Ala

<210> 1022
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (39)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1022
Ser Gly Asn His Val Gln Asn Pro Ser Ser Gly Thr Ala Cys Cys Leu
1 5 10 15

Gln Pro Leu Ser Pro Gly Leu Arg Val Val Tyr Gly His Thr Trp Arg
20 25 30

Phe Phe Val Val Val Phe Xaa Thr Glu Phe His Ser Cys Cys Pro Gly
35 40 45

Trp Ser Ala Met Ala Pro Ser Arg Leu Thr Ala Thr Ser Thr Ser Trp
50 55 60

Phe Lys Arg Ser Gln Ala Ser Ala Ser Gln Val Val Gly Ile Thr Gly
65 70 75 80

Ala Cys His His Thr Trp Leu Ile Leu Tyr Phe

85 90

<210> 1023
<211> 28
<212> PRT
<213> Homo sapiens

<400> 1023
Ala Glu Ile Ala Pro Leu His Ser Ser Leu Gly Asn Lys Ser Glu Thr
1 5 10 15

Leu Ser Gln Lys Lys Asn Lys Lys Pro His Lys Asn
20 25

<210> 1024
<211> 60
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

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<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1024
Lys Val Asn Ile Gly Glu Gly Xaa Arg Xaa Arg Ser Xaa Val Pro Val
1 5 10 15

Arg Asn Ser Arg Val Asp Pro Arg Val Xaa Leu Leu Val Gln Ala Gly
20 25 30

Leu Glu Leu Ala Thr Xaa Gly Asp Pro Pro Ala Ser Ala Ser Gln Ser
35 40 45

Gly Gly Ile Thr Gly Val Ser His Arg Ala Gln Pro
50 55 60

<210> 1025
<211> 67
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (26)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (47)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (65)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1025
Ala Asn Leu Cys Ile Phe Ser Gly Asn Gly Val Leu Pro Arg Trp Pro
1 5 10 15

Xaa Trp Ser Arg Thr Pro Asp Leu Arg Xaa Ser Thr His Pro Ser Leu
20 25 30

Pro Lys Cys Trp Asp Tyr Arg Arg Glu Pro Leu Ser Pro Ala Xaa Phe
35 40 45

Ser Val Phe Asn Ile Ile Phe Val Leu Ser Thr Thr Phe Gln Val Leu
50 55 60

Xaa Val Gln

65

<210> 1026
<211> 71
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (3)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1026
Glu Lys Xaa Leu Lys Glu Glu Gly Lys Ala Gly Trp Gly Gly Trp Gly
1 5 10 15

Lys Glu Ala Gly Ser Ala Asp His Ser Pro Ser Met Ser Cys Phe Leu
20 25 30

Lys Met Leu Glu Leu Gly Gln Ala Trp Trp Leu Thr Pro Val Ile Pro
35 40 45

Ala Leu Trp Glu Ala Glu Ala Gly Arg Ser Leu Glu Val Arg Ser Ser
50 55 60

Arg Pro Ala Trp Pro Thr Trp
65 70

<210> 1027
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (69)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (72)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1027
Asn Pro Val Ser Thr Lys Asn Thr Lys Ile Ser Arg Ala Trp Trp Gln
1 5 10 15

Ala Pro Val Ile Pro Ala Thr Arg Glu Ala Glu Ala Gly Lys Ser Leu
20 25 30

Glu Pro Gly Ser Arg Lys Leu Gln Xaa Ala Lys Val Met Ser Ser Leu
35 40 45

His Ser Ser Leu Gly Asn Lys Ser Glu Asp Phe Val Ser Lys Lys Lys
50 55 60

Leu Thr Asp Phe Xaa Phe Leu Xaa
65 70

<210> 1028
<211> 27
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (16)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (18)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (23)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1028
Ser Gln Leu Leu Gly Arg Leu Arg Gln Glu Asn Cys Leu Ser Pro Xaa
1 5 10 15

Gly Xaa Gly Cys Ser Glu Xaa Arg Ser Gly His
20 25

<210> 1029
<211> 121
<212> PRT

<213> Homo sapiens

<220>
<221> SITE
<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (108)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1029
Asp Met Asn Ser Leu Met Met Gly Xaa Asp Lys Ile Lys Phe Lys His
1 5 10 15

Ile Thr Pro Leu Gln Glu Gln Ser Lys Glu Val Ala Ile Arg Ile Phe
20 25 30

Gln Gly Cys Gln Phe Arg Ser Val Glu Ala Val Gln Glu Ile Thr Glu
35 40 45

Tyr Ala Lys Ser Ile Pro Gly Phe Val Asn Leu Asp Leu Asn Asp Gln
50 55 60

Val Thr Leu Leu Lys Tyr Gly Val His Glu Ile Ile Tyr Thr Met Leu
65 70 75 80

Ala Ser Leu Met Asn Lys Asp Gly Val Leu Ile Ser Glu Gly Pro Ser
85 90 95

Phe Met Thr Arg Glu Phe Leu Lys Ser Leu Arg Xaa Leu Leu Val Thr
100 105 110

Leu Trp Glu Pro Ser Leu Ser Leu Pro
115 120

<210> 1030
<211> 34
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (34)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1030
Ala Glu Glu Thr Pro His Pro Trp Gln Lys Phe Arg Thr Lys Pro Gln

1 5 10 15

Gly Asp Gln Asp Thr Gly Lys Glu Ala Asp Asp Gly Cys Ala Leu Gly
20 25 30

Gly Xaa

<210> 1031
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (107)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (108)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (117)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1031
Ser Glu Ser Gly Pro Arg Cys Ser Ser Pro Val Asp Thr Glu Cys Ser
1 5 10 15

His Ala Glu Gly Ser Arg Ser Gln Gly Pro Glu Lys Ala Phe Ser Pro
20 25 30

Ala Ser Pro Cys Ala Trp Asn Val Cys Val Thr Arg Lys Ala Pro Leu
35 40 45

Leu Ala Ser Asp Ser Ser Ser Ser Gly Gly Ser His Ser Glu Asp Gly
50 55 60

Asp Gln Lys Ala Ala Ser Ala Met Asp Ala Val Ser Arg Gly Pro Gly
65 70 75 80

Arg Glu Ala Pro Arg Cys Pro Gln Trp Pro Arg Gln Lys Lys Leu Leu
85 90 95

Ala Arg Phe Gly Phe Leu Thr Thr Gly Phe Xaa Xaa Leu Pro Cys Pro
100 105 110

Arg Ala Lys Arg Xaa
115

<210> 1032
<211> 46
<212> PRT
<213> Homo sapiens

<400> 1032
Lys Leu Thr Asp Glu Glu Val Asp Glu Met Ile Arg Glu Ala Asp Ile
1 5 10 15

Asp Gly Asp Gly Gln Val Asn Tyr Glu Glu Phe Val Gln Asn Asp Asp
20 25 30

Cys Lys Met Lys Thr Tyr Phe Gln Leu Leu Phe Pro Pro Ser
35 40 45

<210> 1033
<211> 118
<212> PRT
<213> Homo sapiens

<400> 1033
Thr Val Cys Ile Leu Arg Lys Leu Phe Ser His Asn Met Thr Arg Leu
1 5 10 15

Arg Lys Phe Met Val Tyr Phe Gly Lys Asn Gln Ser Leu Gln Lys Ile
20 25 30

Gln Lys Thr Pro Leu Phe Val Ala Ala Ile Cys Ala His Trp Phe Gln
35 40 45

Tyr Pro Phe Asp Pro Ser Phe Asp Asp Val Ala Val Phe Lys Ser Tyr
50 55 60

Met Glu Arg Leu Ser Leu Arg Asn Lys Ala Thr Leu Lys Ile Leu Lys
65 70 75 80

Ala Thr Val Ser Ser Cys Gly Glu Leu Ala Leu Lys Gly Phe Phe Ser
85 90 95

Cys Cys Phe Glu Phe Asn Gly Trp Met Asp Leu Ala Glu Ala Gly Gly
100 105 110

Gly Trp Lys Met Lys Ile

115

<210> 1034
<211> 70
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (15)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (16)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<220>
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<222> (24)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (25)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (30)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (33)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (42)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (49)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (50)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (56)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (59)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (62)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (65)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1034
Val Lys Ser Gly Xaa Tyr Val Val Ile Glu Val Lys Val Ala Xaa Xaa
1 5 10 15

Tyr Gly Ile Xaa Ile Thr Cys Xaa Xaa Tyr Leu Met Thr Xaa Tyr Gln
20 25 30

Xaa Ala Pro Pro Ser Pro Gln Tyr Arg Xaa Ile Ile Cys Met Gly Ala
35 40 45

Xaa Xaa Asn Gly Leu Pro Leu Xaa Tyr Gln Xaa Xaa Leu Xaa Ala Leu
50 55 60

Xaa Pro Asn Asp Tyr Thr
65 70

<210> 1035
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (147)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (155)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (159)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (161)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (162)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1035
Xaa Asp Ala Trp Val Arg Asp Glu Glu Trp Gly Gly His Ser Pro Arg
1 5 10 15

Ser Pro Arg Gly Trp Asp Gln Glu Pro Ala Arg Glu Gln Ala Gly Gly
20 25 30

Gly Trp Arg Ala Arg Arg Pro Arg Ala Arg Ser Val Asp Ala Leu Asp
35 40 45

Asp Leu Thr Pro Pro Ser Thr Ala Glu Ser Gly Ser Arg Ser Pro Thr

50 55 60

Ser Asn Gly Gly Arg Arg Ser Arg Ala Tyr Met Pro Pro Arg Ser Arg
65 70 75 80

Ser Arg Asp Asp Leu Tyr Asp Gln Asp Asp Ser Arg Asp Phe Pro Arg
85 90 95

Ser Arg Asp Pro His Tyr Asp Asp Phe Arg Ser Arg Glu Arg Pro Pro
100 105 110

Ala Asp Pro Arg Ser His His His Arg Thr Arg Asp Pro Arg Asp Asn
115 120 125

Gly Ser Arg Ser Gly Asp Leu Pro Tyr Asp Gly Arg Leu Leu Glu Glu
130 135 140

Ala Val Xaa Lys Lys Gly Ser Asp Glu Arg Xaa Arg Pro His Xaa Glu
145 150 155 160

Xaa Xaa Glu

<210> 1036
<211> 30
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (25)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1036
Gly Cys Pro Pro Arg Ala Xaa Ser Leu Pro Gly Ser Pro Arg Cys Arg
1 5 10 15

Xaa Arg Cys His Thr Met Ala Phe Xaa Thr Arg Gln Phe Met
20 25 30

<210> 1037
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (26)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (29)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (49)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (55)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (57)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (65)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1037
Thr His Phe Phe Xaa Gln His Gln Lys Leu Val Pro Leu Leu Met Ser
1 5 10 15

Ile Met Pro Arg Ile Gln Lys Ala Tyr Xaa Val Phe Xaa Tyr Leu Val
20 25 30

Gln Asp Leu Lys Cys Leu Val Phe Ser Leu Ile Gly Leu His Phe Lys
35 40 45

Xaa Lys Pro Ser Arg Leu Xaa Ile Xaa Val Gly Xaa Gly Gly Gly Trp
50 55 60

Xaa
65

<210> 1038
<211> 90
<212> PRT
<213> Homo sapiens

<400> 1038
Cys Pro Arg Val Arg Pro Arg Val Arg Pro Arg Val Arg Pro Arg Val
1 5 10 15

Arg Thr Pro Ile Pro Val Pro Ala Tyr Phe Arg His Ala Glu Pro Gly
20 25 30

Phe Ser Leu Lys Arg Pro Arg Gly Leu Ser Arg Ser Leu Pro Pro Pro
35 40 45

Pro Pro Ala Lys Gly Ser Ile Pro Ile Ser Arg Leu Phe Pro Pro Arg
50 55 60

Thr Pro Gly Trp His Gln Leu Gln Pro Arg Gly Cys His Ser Gly Arg
65 70 75 80

Arg Pro Arg Asp Ser Ala Glu Pro Trp Val
85 90

<210> 1039
<211> 104
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (12)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (31)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (33)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (51)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (70)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (78)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (86)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE
<222> (91)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (94)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (98)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1039
Ala Ala Ala Gly Pro Gly Xaa Cys Trp Ala Phe Xaa Pro Xaa Arg Leu
1 5 10 15

His Ala Pro Thr Ala Arg Ser Thr Tyr Ser Phe Gln Ala Arg Xaa Leu
20 25 30

Xaa Glu Lys Glu Phe Ser Xaa Leu Ile Ser Leu Gly Thr Asp Arg Leu
35 40 45

Leu Asp Xaa Asp Met Arg Gln Val Phe Gln Phe Xaa Pro His Pro Gly
50 55 60

Gly Arg Cys Ser Gly Xaa Lys Asp Leu Arg Gly Val Thr Xaa Arg Leu
65 70 75 80

Thr Glu Met Leu Pro Xaa Asn Phe Arg Ser Xaa Ala Ala Xaa Phe Leu
85 90 95

Gly Xaa Ser Gly Ala Pro Phe Ser
100

<210> 1040
<211> 109
<212> PRT
<213> Homo sapiens

<400> 1040
Gly Arg Trp Leu Lys Asp Gln Glu Leu Ser Pro Arg Glu Pro Val Leu
1 5 10 15

Pro Pro Gln Lys Met Gly Pro Met Glu Lys Phe Trp Asn Lys Phe Leu
20 25 30

Glu Asn Lys Ser Pro Trp Arg Lys Met Val His Gly Val Tyr Lys Lys

35 40 45

Ser Ile Phe Val Phe Thr His Val Leu Val Pro Val Trp Ile Ile His
50 55 60

Tyr Tyr Met Lys Tyr His Val Ser Glu Lys Pro Tyr Gly Ile Val Glu
65 70 75 80

Lys Lys Ser Arg Ile Phe Pro Gly Asp Thr Ile Leu Glu Thr Gly Glu
85 90 95

Val Ile Pro Pro Met Lys Glu Phe Pro Asp Gln His His
100 105

<210> 1041
<211> 197
<212> PRT
<213> Homo sapiens

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<400> 1041
Ala Ser Xaa His Gln Pro Ser Leu Lys Gly Thr Lys Ala Gly Ala Pro
1 5 10 15

Pro Arg Cys Gly Arg Ser Arg Thr Ser Gly Ser Pro Gly Leu Gln Glu
20 25 30

Phe Gly Thr Arg Ser Val Ser Gly Ala Asp Gly Gly Ser Ala Ala Cys
35 40 45

Ser Trp Lys Phe Arg Leu Gly Cys Leu Leu Gly Ala Met Glu Ser Asp
50 55 60

Phe Tyr Leu Arg Tyr Tyr Val Gly His Lys Gly Lys Phe Gly His Glu
65 70 75 80

Phe Leu Glu Phe Glu Phe Arg Pro Asp Gly Lys Leu Arg Tyr Ala Asn
85 90 95

Asn Ser Asn Tyr Lys Asn Asp Val Met Ile Arg Lys Glu Ala Tyr Val
100 105 110

His Lys Ser Val Met Glu Glu Leu Lys Arg Ile Ile Asp Asp Ser Glu
115 120 125

Ile Thr Lys Glu Asp Asp Ala Leu Trp Pro Pro Pro Asp Arg Val Gly
130 135 140

Arg Gln Glu Leu Glu Ile Val Ile Gly Asp Glu His Ile Ser Phe Thr
145 150 155 160

Thr Ser Lys Ile Gly Ser Leu Ile Asp Val Asn Gln Ser Lys Asp Pro
165 170 175

Glu Gly Leu Arg Val Phe Tyr Tyr Leu Val Gln Asp Leu Lys Cys Leu
180 185 190

Val Phe Ser Leu Ile
195

<210> 1042
<211> 110
<212> PRT
<213> Homo sapiens

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<400> 1042
Ala Gly Phe Gly Ser Gln Xaa Leu Phe Val Asp Cys Cys Asp Arg His
1 5 10 15

Leu Thr Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr
20 25 30

Leu Glu Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile
35 40 45

Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala
50 55 60

Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Xaa
65 70 75 80

Lys Glu Ser Thr Leu His Leu Val Leu Arg Leu Xaa Gly Gly Met Gln
85 90 95

Ile Phe Xaa Lys Thr Leu Thr Gly Lys Thr Xaa Thr Leu Glu
100 105 110

<210> 1043
<211> 109
<212> PRT
<213> Homo sapiens

<400> 1043
Leu His Gln Pro Ala Lys Met Ala Met Gln Ala Ala Lys Arg Ala Asn
1 5 10 15

Ile Arg Leu Pro Pro Glu Val Asn Arg Ile Leu Tyr Ile Arg Asn Leu
20 25 30

Pro Tyr Lys Ile Thr Ala Glu Glu Met Tyr Asp Ile Phe Gly Lys Tyr
35 40 45

Gly Pro Ile Arg Gln Ile Arg Val Gly Asn Thr Pro Glu Thr Arg Gly
50 55 60

Thr Ala Tyr Val Val Tyr Glu Asp Ile Phe Asp Ala Lys Asn Ala Cys
65 70 75 80

Asp His Leu Ser Gly Phe Asn Val Cys Asn Arg Tyr Leu Val Val Leu
85 90 95

Tyr Tyr Asn Ala Asn Arg Ala Phe Gln Lys Met Asp Thr
100 105

<210> 1044
<211> 16

<212> PRT
<213> Homo sapiens

<400> 1044
Lys Leu Ile Gln Val Gly Lys Leu Asp Arg Thr Phe His Leu Ser Tyr
1 5 10 15

<210> 1045
<211> 100
<212> PRT
<213> Homo sapiens

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<400> 1045
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Ser Ser Xaa Pro Thr Pro Pro Ser Ser Cys Leu Xaa Pro Pro Gly Xaa
 1               5                  10                  15

Arg Pro Xaa Asp Ser Thr Xaa Val Pro Ala Asn Ser Met Arg Leu Lys
            20                  25                  30

Tyr Gln His Thr Gly Xaa Val Leu Asp Cys Xaa Phe Tyr Gly Pro Xaa
        35                  40                  45
```

Xaa Ala Trp Ser Xaa Gly Leu Asp His Gln Leu Lys Met His Asp Leu
50 55 60

Thr Leu Ile Lys Lys Ile Ser Trp Thr His Xaa Ala Leu Xaa Asp Val
65 70 75 80

Leu Asn Thr Val Arg Ser Glu Leu Xaa Trp Xaa Trp Lys Leu Gly Leu
85 90 95

Ala Ser Xaa Pro
100

<210> 1046
<211> 114
<212> PRT
<213> Homo sapiens

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<222> (110)
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<400> 1046
Phe Ile Ser Val Ser Glu Lys Ser Lys Asp Arg Gly Ser Asn Thr Ile
1 5 10 15

Gly Ala Arg Leu Asn Arg Val Glu Asp Lys Val Thr Gln Leu Asp Gln
20 25 30

Arg Leu Ala Leu Ile Thr Asp Met Leu His Gln Leu Leu Ser Leu His
35 40 45

Gly Gly Ser Thr Pro Glu Pro Thr Val Arg Gly Ala Pro Xaa Xaa Asn
50 55 60

Pro Ser Pro Ser Pro Ser Ser Gln Pro Asn Thr Gln Lys Gly Thr Ala
65 70 75 80

Thr Phe Pro Cys Gln Leu Leu Ser Arg Arg Glu Val Thr Val Pro Thr

85 90 95

Gln Asp Arg Gly Ser Phe Trp Ala Leu His Arg Ile Glu Xaa Asn Asn
100 105 110

Leu Trp

<210> 1047
<211> 92
<212> PRT
<213> Homo sapiens

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<222> (89)
<223> Xaa equals any of the naturally occurring L-amino acids

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<400> 1047
Asp Arg Phe Ser Gly Ser Lys Ser Ala Ser Thr Ala Ser Leu Thr Ile
1 5 10 15

Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Xaa
20 25 30

Thr Ser Ser Ile Ser Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
35 40 45

Leu Val Gln Pro Lys Ala Asn Pro Thr Val His Ser Cys Phe Pro Pro

50 55 60

Ser Ser Leu Arg Thr Ser Lys Pro Asn Lys Gly Asn Tyr Val Phe Trp
65 70 75 80

Asn His Tyr Phe Xaa Pro Gly Xaa Xaa Xaa Lys Cys
85 90

<210> 1048
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (7)
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (91)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1048
Arg Gly Arg Gly Lys Arg Xaa Pro Asp Xaa Lys Pro Pro Ala Leu Pro
1 5 10 15

Arg Pro Ile Xaa Asn Leu Glu Val Glu Phe Thr Lys Ile Phe Xaa Xaa
20 25 30

Asn Gly Met Gly Arg Ile Xaa Xaa Trp Glu Lys Val Cys Tyr Met Leu
35 40 45

Pro Xaa Asn Ser Gly Xaa Lys Tyr Val Lys Trp Lys Xaa Glu Ile Xaa
50 55 60

Pro Thr Trp Asp Glu Gly Cys Gly Ser Cys Thr Gly Xaa Leu Pro Lys
65 70 75 80

Arg Xaa Pro Pro Trp Ala Pro Gly Gly Met Xaa

85 90

<210> 1049
<211> 149
<212> PRT
<213> Homo sapiens

<400> 1049
Pro Gly Gln Ser Pro Glu Leu Gln Thr Met Ser Val Ser Phe Leu Ile
1 5 10 15

Phe Leu Pro Val Leu Gly Leu Pro Trp Gly Val Leu Ser Gln Val Gln
20 25 30

Leu Gln Gln Ser Gly Pro Gly Leu Val Lys Pro Ser Gln Thr Leu Ser
35 40 45

Leu Thr Cys Ala Ile Ser Gly Asp Thr Val Ser Arg Asn Ser Ala Gly
50 55 60

Trp Asn Trp Ile Arg Gln Ser Pro Ser Arg Gly Leu Glu Trp Leu Gly
65 70 75 80

Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr Asn Asp Tyr Ala Val Ser Val
85 90 95

Lys Ser Arg Ile Thr Ile Asn Ala Asp Ser Thr Lys Asn Gln Phe Ser
100 105 110

Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Leu Tyr Tyr Cys
115 120 125

Ala Arg Asp Arg Gly Ser Trp Ser Asp Glu Ala Glu Gly Leu Pro Pro
130 135 140

Arg Tyr Phe Tyr Tyr
145

<210> 1050
<211> 146
<212> PRT
<213> Homo sapiens

<220>
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<222> (123)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1050

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Ala Gln Leu Leu Thr Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val
  1               5                  10                  15

Ala Ala Ala Thr Ser Ala His Ser Gln Val Gln Leu Val Gln Ser Gly
             20                  25                  30

Ala Glu Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala
         35                  40                  45

Ser Gly Tyr Thr Phe Thr Ser Tyr Asp Ile Asn Trp Val Arg Gln Ala
     50                  55                  60

Thr Gly Gln Gly Leu Glu Trp Val Gly Trp Met Asn Pro Asn Ser Ala
 65                  70                  75                  80

Asn Thr Gly Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg
                 85                  90                  95

Asn Thr Ser Ile Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser
            100                 105                 110

Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Xaa Arg Arg Trp Glu Leu
        115                 120                 125

Leu Gly Met Met Trp Asp Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
    130                 135                 140

Thr Val
145
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<210> 1051
<211> 55
<212> PRT
<213> Homo sapiens

<400> 1051

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Gly Arg Gly Ile Ser Gly Leu Leu Phe Leu Ser Ser Thr Ile Met Gly
  1               5                  10                  15

Ser Thr Ala Ile Leu Ala Leu Leu Leu Ala Val Leu Gln Gly Val Cys
             20                  25                  30

Gly Glu Val Gln Leu Val His Ala Gly Gly Glu Met Arg Lys Ala Arg
         35                  40                  45

Gly Val Ser Glu Asp Leu Leu
     50                  55
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<210> 1052
<211> 144
<212> PRT
<213> Homo sapiens

<220>
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<222> (40)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<220>
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<222> (134)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1052
Thr Met Ala Trp Thr Pro Leu Leu Phe Leu Thr Leu Leu Leu His Cys
1 5 10 15

Thr Gly Ser Leu Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser
20 25 30

Ala Ser Leu Gly Ala Ser Val Xaa Leu Thr Cys Thr Leu Ser Ser Gly
35 40 45

His Xaa Asp Tyr Ala Ile Ala Trp His Gln Gln Gln Pro Glu Lys Gly
50 55 60

Pro Arg Tyr Leu Leu Xaa Leu Asn Thr Asp Gly Ser His Arg Lys Gly
65 70 75 80

Asp Gly Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg
85 90 95

Tyr Leu Thr Ile Ser Ser Leu Gln Ser Glu Asp Xaa Ala Asp Tyr Tyr
100 105 110

Cys Gln Asn Trp Gly Phe Gly Xaa Val Phe Gly Xaa Arg Asp Gln Xaa
115 120 125

Glu Arg Pro Lys Ser Xaa Gln Gly Cys Pro Leu Gly Gln Ser Val Pro
130 135 140

<210> 1053
<211> 52
<212> PRT
<213> Homo sapiens

<220>
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<222> (26)
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<400> 1053
Gly Thr Ser Ser Pro Ser Leu Ala Glu Asp Pro Phe Gln Gly Gly Gln
1 5 10 15

Val Cys Ala Pro Ser Arg Ala Ile Gln Xaa Ile Cys Leu Pro Ser Met
20 25 30

Tyr Asn Asp Pro Gln Phe Gly Thr Ser Cys Glu Ile Thr Gly Leu Trp
35 40 45

Lys Lys Glu Phe

50

<210> 1054
<211> 67
<212> PRT
<213> Homo sapiens

<400> 1054
Gln Val Gly Ala Ala Ala Val Ala Met Thr Arg Gly Asn Gln Arg Glu
1 5 10 15

Leu Ala Arg Gln Lys Asn Met Lys Lys Gln Ser Asp Ser Val Lys Gly
20 25 30

Lys Arg Arg Asp Asp Gly Leu Ser Ala Ala Ala Arg Lys Gln Arg Asp
35 40 45

Ser Glu Ile Met Gln Gln Lys Gln Lys Lys Ala Asn Glu Lys Lys Glu
50 55 60

Glu Pro Lys
65

<210> 1055
<211> 121
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1055
Glu Ala Glu Xaa Lys Met Ser Ser Tyr Ala Phe Phe Val Gln Thr Cys
1 5 10 15

Arg Glu Glu His Lys Lys Lys His Pro Asp Ala Ser Val Asn Phe Ser
20 25 30

Glu Phe Ser Lys Lys Cys Ser Glu Arg Trp Lys Thr Met Ser Ala Lys
35 40 45

Glu Lys Gly Lys Phe Glu Asp Met Ala Lys Ala Asp Lys Ala Arg Tyr
50 55 60

Glu Arg Glu Met Lys Thr Tyr Ile Pro Pro Lys Gly Glu Thr Lys Lys

65 70 75 80

Lys Phe Lys Asp Pro Asn Ala Pro Lys Arg Pro Pro Ser Ala Phe Phe
85 90 95

Leu Phe Cys Ser Glu Tyr Arg Pro Lys Ile Lys Gly Glu His Pro Gly
100 105 110

Leu Ser Ile Gly Asp Val Ala Lys Lys
115 120

<210> 1056
<211> 57
<212> PRT
<213> Homo sapiens

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<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (13)
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<400> 1056
Xaa Cys Xaa Ile Lys Thr Asn Lys Asn Val Lys Arg Xaa Lys Ser Gln
1 5 10 15

Arg Ala Thr Lys Arg Ile Ser His Met Pro Ser Arg Pro Glu Leu Ser
20 25 30

Ala Val Ala Thr Arg Glu Glu Arg Thr Met Trp Ile Pro Cys Gly Tyr
35 40 45

Ala Asp Thr Tyr Leu Thr Glu Leu Leu
50 55

<210> 1057
<211> 118
<212> PRT

<213> Homo sapiens

<400> 1057
Lys Leu Arg Gln Ala Phe Gln Gly Asp Ser Ile Pro Val Phe Asp Leu
1   5   10   15

Leu Ile Leu Gly Val Gly Pro Asp Gly His Thr Cys Ser Leu Phe Pro
            20   25   30

Asp His Pro Leu Leu Gln Glu Arg Glu Lys Ile Val Ala Pro Ile Ser
        35   40   45

Asp Ser Pro Lys Pro Pro Pro Gln Arg Val Thr Leu Thr Leu Pro Val
    50   55   60

Leu Asn Ala Ala Arg Thr Val Ile Phe Val Ala Thr Gly Glu Gly Lys
65   70   75   80

Ala Ala Val Leu Lys Arg Ile Leu Glu Asp Gln Glu Glu Asn Pro Leu
                85   90   95

Pro Ala Ala Trp Ser Ser Pro Thr Pro Gly Asn Cys Ala Gly Leu Gly
            100   105   110

Arg Gly Gly Arg Arg Phe
        115

<210> 1058
<211> 104
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 1058
Val Xaa Xaa Glu Pro His Gly Xaa Thr Leu Val Phe Ala Arg His Gly
1   5   10   15

Arg Glu Arg Leu Gly Xaa Gly Asp Gly Ala Ala Gln Glu Gly Pro Tyr
            20   25   30

Gly Arg Pro Ala Thr Ser Lys Gln Ala Ile Leu Ala Ala Gln Arg Leu
        35   40   45

Gly Glu Asp Val Glu Thr Ser Asn Lys Trp Ala Ala Gly Xaa Asn Lys
    50   55   60

Gln His Ser Ile Thr Lys Asn Thr Ala Lys Leu Asp Arg Xaa Thr Glu
65   70   75   80

Cys Cys Thr Met Thr Gly Asp Pro Glu Val Xaa Gln Val Ile Gln Gln
                85   90   95

Val Gly Xaa Xaa Arg Ala Tyr Thr
            100

<210> 1059
<211> 48
<212> PRT
<213> Homo sapiens

<400> 1059
Arg Glu Gln Lys Leu Glu Leu His Arg Gly Ala Ala Ala Leu Glu Leu
1 5 10 15

Val Asp Pro Pro Gly Cys Arg Asn Ser Ala Arg Val Leu Pro Leu Arg
20 25 30

Glu Ser Asn Cys Ile Pro Ala Ser Val Ser Phe Leu Cys Val Ile Ser
35 40 45

<210> 1060
<211> 100
<212> PRT
<213> Homo sapiens

<220>
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<222> (99)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1060
Arg Asn Val Thr His Ile Asp Gln Ala Leu Gln Glu Ala His Arg Val
1 5 10 15

Leu Lys Pro Gly Gly Arg Phe Leu Cys Leu Glu Phe Ser Gln Val Asn

20 25 30

Asn Pro Leu Ile Ser Arg Leu Tyr Asp Leu Tyr Ser Phe Gln Val Ile
35 40 45

Pro Val Leu Gly Glu Val Ile Ala Gly Asp Trp Lys Ser Tyr Gln Tyr
50 55 60

Leu Val Glu Ser Ile Arg Arg Phe Pro Xaa Xaa Glu Glu Phe Xaa Asp
65 70 75 80

Met Ile Glu Asp Ala Gly Phe His Lys Val Thr Tyr Glu Ser Leu Thr
85 90 95

Ser Gly Xaa Val
100

<210> 1061
<211> 137
<212> PRT
<213> Homo sapiens

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<400> 1061
Phe Gly Thr Arg Glu Arg Glu Arg Glu Arg Glu Arg Glu Arg Glu Arg
1   5   10   15

Val Ala Xaa Val Xaa Val Ser Ser Val Ser Arg Leu Leu Xaa Arg Xaa
            20   25   30

Xaa Pro Xaa Leu Gly Arg Ser Met Ser Ser Gly Ala His Gly Glu Glu
        35   40   45

Xaa Ser Xaa Xaa Met Trp Lys Xaa Leu Thr Phe Phe Val Ala Leu Pro
    50   55   60

Gly Val Xaa Xaa Xaa Xaa Leu Xaa Val Tyr Leu Lys Ser His His Gly
65   70   75   80

Glu His Glu Xaa Pro Glu Phe Ile Val Tyr Pro Tyr Leu Arg Ile Arg
                85   90   95

Xaa Lys Xaa Phe Pro Trp Gly Asp Xaa Xaa His Thr Phe Xaa His Asn
            100   105   110

Pro Tyr Val Xaa Pro Xaa Pro Leu Xaa Thr Glu Xaa Tyr Xaa Glu Xaa
        115   120   125

Leu Xaa Ile Thr Gly Xaa Thr Gly Pro
    130   135

<210> 1062
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Gly Leu Xaa Phe Xaa Gly Met His Xaa Met Ala Xaa Thr His Trp Pro
1   5   10   15

Cys Pro Trp Pro Ala Leu Met Thr Arg Trp Thr Val Ser Leu Arg Ala
            20   25   30

Pro Xaa Leu Ala Gln Leu Ser Asp Val Ala Met His Ser Leu Gly Xaa
        35   40   45

Ala Phe Ile Tyr Xaa Gln Thr Asp Asp Ile Xaa Asp Val

50 55 60

<210> 1063
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<400> 1063
Thr Tyr Xaa Pro Xaa Ser Xaa Gly Ile Cys Arg Val Ser Leu Xaa Leu
1 5 10 15

Pro Gln Gln Trp Xaa Thr Phe Ala Lys Ile Trp Tyr Ile Leu Asp Gly
20 25 30

Lys Met Xaa Pro Pro Gly Lys Leu Ala Ala Met Xaa Ser Ile Arg Leu
35 40 45

Xaa Gly Leu His Xaa Pro Ala Tyr His Ala Leu Thr Asp Cys Gly Asp
50 55 60

His Val Cys Tyr
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Arg Asp Ile Glu Pro Gly Glu Glu Ile Ser Xaa Tyr Tyr Gly Asp Gly
1 5 10 15

Phe Phe Gly Glu Asn Asn Glu Phe Cys Glu Cys Tyr Thr Cys Glu Arg
20 25 30

Arg Gly Thr Gly Ala Phe Lys Ser Arg Val Gly Leu Pro Ala Pro Ala
35 40 45

Pro Val Ile Asn Ser Lys Tyr Gly Leu Arg Glu Thr Asp Lys Arg Leu
50 55 60

Asn Arg Leu Lys Lys Leu Gly Asp Ser Ser Lys Asn Ser Asp Ser Gln
65 70 75 80

Ser Val Ser Ser Asn Thr Asp Ala Asp Thr Thr Gln Glu Lys Asn Asn
85 90 95

Ala Thr Ser Asn Arg Lys Ser Ser Val Gly Val Lys Lys Asn Ser Lys

100 105 110

Ser Arg Thr Leu Thr Arg Gln Ser Met Ser Arg Ile Pro Ala Ser Ser
115 120 125

Asn Ser Thr Ser Ser Lys Leu Asn Ser Tyr Lys
130 135

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Gly Thr Cys His Xaa Xaa Pro Trp Gly Pro Met Glu Pro Xaa Lys Arg
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Pro Trp Arg Leu Leu Met Asp Thr Phe Xaa Cys Lys Leu Leu Pro Trp
            20   25   30

Gly Val Lys Val Xaa His His Pro Xaa Trp Xaa Leu Gln Asp Arg Val
        35   40   45

Ser Glu Glu Thr Trp Val Xaa Trp Glu Lys Arg Gln Gln Xaa Ala Xaa
    50   55   60

Gly Pro Thr Leu Ser Xaa Glu Leu Leu Gln Xaa Leu Arg Glu
65   70   75

<210> 1066
<211> 67
<212> PRT
<213> Homo sapiens

<400> 1066
Leu Glu Arg His His Leu Glu Phe Gly Lys Thr Leu Leu Arg Asp Glu
1   5   10   15

Ser Leu Asn Ile Phe Gln Asn Leu Asn Arg Arg Gln His Glu His Ala
20 25 30

Ile His Met Met Asp Ile Ala Ile Ile Ala Thr Asp Leu Ala Leu Tyr
35 40 45

Phe Lys Lys Arg Thr Met Phe Gln Lys Ile Val Asp Gln Ser Lys Thr
50 55 60

Tyr Glu Ser
65

<210> 1067
<211> 98
<212> PRT
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<400> 1067

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Ser Ala Arg Xaa Trp Asn Thr Xaa Trp Asn Pro Lys Asn Ser Asp Ser
 1               5                  10                  15

Gly Lys Tyr Trp Gly Lys Ser Trp Leu Pro Xaa Asn Tyr Thr Leu Val
            20                  25                  30

Asp Met Lys Ile Xaa Phe Gly Val Asp Ile Thr Thr Lys Glu Met Val
        35                  40                  45

Leu Ala Asp Asp Ser Trp Arg Leu Ala Ile Thr Ser Ile Glu Ala Asn
    50                  55                  60

Ser Lys Asp Xaa Xaa Ser Tyr Trp Xaa Leu Lys Glu Val Thr Pro Glu
65                  70                  75                  80

Gly Leu Xaa Met Val Lys Lys Ser Phe Glu Ala Gly His Gly Asp Ser
                85                  90                  95

Cys Leu
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<210> 1068
<211> 167
<212> PRT
<213> Homo sapiens

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Ser Val Ser Leu Met Ser Asp Leu Glu Gly Asn Thr Lys Ser Arg Val
1   5   10   15

Arg Leu Leu Val Leu Val Pro Pro Ser Lys Pro Glu Cys Gly Ile Glu
            20   25   30

Gly Glu Thr Ile Ile Gly Asn Asn Ile Gln Leu Thr Cys Gln Ser Lys
        35   40   45

Glu Gly Ser Pro Thr Pro Pro Val Gln Leu Glu Arg Ser Tyr Asn Ile

50 55 60

Leu Asn Gln Xaa Xaa Pro Leu Ala Pro Pro Thr Ser Gly Ser Thr Cys
65 70 75 80

Ser Pro Leu Lys Asn Ile Ser His Arg Thr His Xaa Val Tyr Xaa Leu
85 90 95

Val Pro Pro Ser Asn Lys Xaa Gly Asn Xaa Phe Leu Gln Leu His Gly
100 105 110

Gly Leu Xaa Asn Leu Pro Pro Ile Xaa Phe Gly Pro Phe Phe Xaa Leu
115 120 125

Pro Gly Gly Val Phe Phe Phe Thr Pro Leu Ile Xaa Xaa Xaa Xaa Xaa
130 135 140

Leu Xaa Xaa Xaa Xaa Pro Gly Glu Arg Xaa Asn Pro Xaa Lys Lys Gly
145 150 155 160

Lys Pro Gly Thr Xaa Thr Leu
165

<210> 1069
<211> 142
<212> PRT
<213> Homo sapiens

<400> 1069
Val Leu Pro Pro Leu Leu Ile Met Leu Val Ile Tyr Ile Lys Ile Phe
1 5 10 15

Leu Val Ala Cys Arg Gln Leu Gln Arg Thr Glu Leu Met Asp His Ser
20 25 30

Arg Thr Thr Leu Gln Arg Glu Ile His Ala Ala Lys Ser Leu Ala Met
35 40 45

Ile Val Gly Ile Phe Ala Leu Cys Trp Leu Pro Val His Ala Val Asn
50 55 60

Cys Val Thr Leu Phe Gln Pro Ala Gln Gly Lys Asn Lys Pro Lys Trp
65 70 75 80

Ala Met Asn Met Ala Ile Leu Leu Ser His Ala Asn Ser Val Val Asn
85 90 95

Pro Ile Val Tyr Ala Tyr Arg Asn Arg Asp Phe Arg Tyr Thr Phe His
100 105 110

Lys Ile Ile Ser Arg Tyr Leu Leu Cys Gln Ala Asp Val Lys Ser Gly
        115   120   125

Asn Gly Gln Ala Gly Val Gln Pro Ala Leu Gly Val Gly Leu
    130   135   140

<210> 1070
<211> 44
<212> PRT
<213> Homo sapiens

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<400> 1070
Ala Glu Arg Lys Ala Leu Leu Leu Gln Gly Ser Asn Glu Ile Xaa Ile
1 5 10 15

Arg Ala Arg Gly Gln Xaa Pro Leu Xaa Leu Gln Xaa His Xaa Arg Trp
20 25 30

Leu His Xaa Xaa His Arg Xaa Pro Gly Ala Arg Xaa
35 40

<210> 1071
<211> 97
<212> PRT
<213> Homo sapiens

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<400> 1071
Met Glu Ala Ala Asp Tyr Arg Xaa Ala Ser Ser Gln Gln Gly Leu Ala
1 5 10 15

Tyr Ala Thr Glu Ala Val Tyr Glu Ser Ala Glu Ala Pro Gly His Tyr
20 25 30

Pro Ala Glu Asp Ser Thr Tyr Asp Glu Tyr Glu Asn Asp Leu Gly Ile
35 40 45

Thr Ala Val Ala Leu Tyr Xaa Tyr Gln Ala Ala Gly Asp Asp Glu Ile
50 55 60

Ser Phe Xaa Pro Asp Asp Ile Ile Thr Asn Ile Glu Met Ile Xaa Asp
65 70 75 80

Gly Trp Trp Arg Gly Val Cys Lys Gly Arg Phe Arg Glu Leu Ala Phe
85 90 95

Ser

<210> 1072
<211> 76
<212> PRT
<213> Homo sapiens

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<400> 1072
Pro Cys Lys Asp Ile Asn Thr Phe Xaa His Gly Asn Lys Arg Arg Phe
1 5 10 15

Lys Xaa Ile Cys Glu Asn Lys Xaa Trp Lys Pro Leu Gln Gly Asn Leu
20 25 30

Arg Phe Xaa Xaa Val Phe Phe Phe Gln Xaa Thr Ile Trp Lys Val Xaa
35 40 45

Xaa Gly Val Ser Xaa Gly Xaa Xaa Xaa Thr Phe Pro Gly Xaa Xaa Xaa
50 55 60

Gly Leu Lys Xaa Xaa Phe Phe Phe Phe Xaa Lys Arg
65 70 75

<210> 1073
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<400> 1073
His Lys Gln Phe Ala Ser Leu Glu His Gly Ile Val Pro Xaa Thr Ser
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Asp Cys Gln Tyr Leu Phe Pro Ala Lys Val Val Ser Arg Leu Val Xaa
20 25 30

Trp Val Thr Xaa Ala His Glu Asp Tyr Met Glu Leu His Phe Thr Lys
35 40 45

Asp Ile Val Asp Ala Gly Leu Ala Gly Asp Thr Asn Leu Tyr Tyr Met
50 55 60

Ala Leu Ile Glu Arg Gly Thr Ala Lys Leu Gln Ala Ala Val Val Leu
65 70 75 80

Asn Pro Gly Tyr Ser Ser Ile Pro Pro Val Phe Xaa Leu Cys Leu Asn
85 90 95

Trp Lys Xaa Glu Lys Thr Asn Ser Asn Xaa Xaa Asn Ile Xaa Gly His
100 105 110

Gly Gly Arg
115

<210> 1074

<211> 56
<212> PRT
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<400> 1074
Ser Ala His Xaa Cys Leu Ile Asn Ala Thr Ser Thr Xaa Thr Glu Phe
  1   5   10   15

Leu Lys Xaa Leu Val Leu Pro Xaa Ile Gly Ser Phe Thr Ile Ile Asp
             20   25   30

Gly Asn Gln Val Xaa Gly Gln Asn Xaa Gly Asn Asn Phe Phe Leu Gln
         35   40   45

Lys Ile Leu Ser Ala Xaa Thr Asp
     50   55

<210> 1075
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<212> PRT
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Gly Thr Ser Glu Thr Pro Ala Gly Thr Ile Leu Tyr His Ala His Leu
1   5   10   15

Asp Ile Glu Ala Phe Thr Met Asp Arg Glu Val Arg Lys Ile Lys Gln
            20   25   30

Gly Leu Gly Leu Lys Phe Ala Glu Xaa Val Tyr Thr Gly Phe Trp His
        35   40   45

Ser Pro Glu Cys Glu Phe Val Arg His Cys Ile Ala Lys Ser Gln Glu
    50   55   60

Arg Val Glu Gly Lys Val Gln Val Ser Val Leu Lys Gly Gln Val Tyr
65   70   75   80

Ile Leu Gly Arg Glu Ser Pro Leu Ser Leu Tyr Asn Glu Glu Leu Val
                85   90   95

Ser Met Asp Glu Asn Leu Met His Ile Ser Tyr Xaa Ala Gly Ile Leu
100 105 110

Glu Xaa Pro Lys Asn Gln Ala Leu Xaa Val Leu Asn Glu Asp Pro Xaa
115 120 125

Pro Ser Gln Ser Pro Asn Asn Pro Asp Ile Ser Glu Ile Glu Phe Lys
130 135 140

Lys Gly
145

<210> 1076
<211> 130
<212> PRT
<213> Homo sapiens

<400> 1076
Trp Ile Pro Arg Ala Ala Gly Arg His Val Gly Val Cys Gly Ser Gly
1 5 10 15

Gly Arg Cys Ser Gly Leu Arg Gly Leu Ala Glu Thr His Pro Phe Ser
20 25 30

Val Ala Ala Pro Ser Ser Ala Leu Thr Ala Gly Arg Pro Thr Ala Val
35 40 45

His Pro Gly Glu Ser Thr Val Arg Thr Ile Ala Met Asp Gly Thr Glu
50 55 60

Gly Leu Val Arg Gly Gln Lys Val Leu Asp Ser Gly Ala Pro Ile Lys
65 70 75 80

Ile Pro Val Gly Pro Glu Thr Leu Gly Arg Ile Met Asn Val Ile Gly
85 90 95

Glu Pro Ile Asp Glu Arg Gly Pro Ile Lys Thr Lys Gln Phe Ala Pro
100 105 110

Ile His Ala Glu Ala Pro Glu Phe Met Glu Met Ser Val Glu Gln Glu
115 120 125

Ile Leu
130

<210> 1077

<211> 55
<212> PRT
<213> Homo sapiens

<400> 1077
Gly Gln Gly Gln Asp Gly Ala Thr Gly Ala Gly Leu Ser Ala His Gln
1 5 10 15

Asp Tyr Leu Lys Pro Arg Ala Glu Glu Glu Arg Arg Ile Ala Ala Glu
20 25 30

Glu Lys Lys Lys Gln Asp Glu Leu Lys Arg Ile Ala Arg Glu Leu Ala
35 40 45

Glu Asp Asp Ser Ile Leu Lys
50 55

<210> 1078
<211> 71
<212> PRT
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<400> 1078
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1 5 10 15

Arg Val Gln Asp Tyr Asn Ser Arg Gln Gly Ala Gln Asn Asp Arg Pro
20 25 30

Arg Gln Arg Arg Leu Thr Arg Ile Ser Met Ile Leu Xaa Arg Leu Xaa
35 40 45

Arg Phe Ser Ser Val Ile Arg Ser Ala Val Ser Val His Leu Arg Arg
50 55 60

Asn Ile Gly Val Thr Ala Val
65 70

<210> 1079
<211> 74
<212> PRT
<213> Homo sapiens

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Xaa Gly Ala Val Ile Ile Xaa Phe Arg Ser Lys Ile Lys Xaa Ala Leu
1   5   10   15

Ala His Phe Leu Ser Lys Xaa Thr Pro Thr Pro Leu Ile Pro Ile Leu
            20   25   30

Val Ile Met Xaa Asn Xaa Ile Leu Leu Xaa Xaa Pro Ile Ala Leu Gly
        35   40   45

Val Ser Leu Ile Ala Tyr Ile Thr Xaa Gly His Xaa Leu Met His Leu
    50   55   60

Ile Gly Xaa Val Pro Tyr Asn Ile Asn His
65   70

<210> 1080
<211> 39
<212> PRT
<213> Homo sapiens

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<400> 1080
Thr Asp Tyr Gly Xaa Thr Ala Thr Lys Gln Xaa Val Xaa Ala Gly Thr
1 5 10 15

Phe Phe Trp Ser Val Val Ile Pro Xaa Leu Arg Arg Ile Leu Thr Ile
20 25 30

Leu Gln Trp Leu Thr Xaa Pro
35

<210> 1081
<211> 76
<212> PRT
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<400> 1081
Gly Arg Xaa Xaa Lys Val Leu Lys Arg Leu Arg Leu Gln Lys Arg Gly
1 5 10 15

Thr Gly Gly Val Asp Thr Ala Ala Val Gly Gly Val Phe Asp Val Ser
20 25 30

Asn Ala Asp Arg Leu Gly Phe Ser Glu Val Glu Leu Val Gln Met Val
35 40 45

Val Asp Gly Val Lys Leu Leu Ile Glu Met Glu Gln Arg Leu Glu Gln
50 55 60

Gly Gln Ala Ile Asp Asp Leu Met Pro Ala Gln Lys
65 70 75

<210> 1082
<211> 144
<212> PRT
<213> Homo sapiens

<400> 1082
Pro Val Thr Asn Glu Gly Ser Arg Asp Trp Thr Asp Ala Ala Met Pro
1 5 10 15

Leu Arg Leu Asp Ile Lys Arg Lys Leu Thr Ala Arg Ser Asp Arg Val
20 25 30

Lys Ser Val Asp Leu His Pro Thr Glu Pro Trp Met Leu Ala Ser Leu
35 40 45

Tyr Asn Gly Ser Val Cys Val Trp Asn His Glu Thr Gln Thr Leu Val
50 55 60

Lys Thr Phe Glu Val Cys Asp Leu Pro Val Arg Ala Ala Lys Phe Val
65 70 75 80

Ala Arg Lys Asn Trp Val Val Thr Gly Ala Asp Asp Met Gln Ile Arg
85 90 95

Val Phe Asn Tyr Asn Thr Leu Glu Arg Val His Met Phe Glu Ala His
100 105 110

Ser Asp Tyr Ile Arg Cys Ile Ala Val His Pro Thr Gln Pro Phe Ile
115 120 125

Leu Thr Ser Ser Asp Asp Met Leu Ile Lys Leu Trp Asp Trp Asp Lys
130 135 140

<210> 1083
<211> 120
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<213> Homo sapiens

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Glu Met Xaa Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu
1   5   10   15

Ser Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser
            20   25   30

Arg His Pro Ala Glu Asn Gly Lys Ser Asn Phe Leu Asn Cys Tyr Val
        35   40   45

Ser Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly
    50   55   60

Glu Arg Ile Glu Lys Val Glu His Ser Asp Leu Xaa Phe Ser Lys Asp
65   70   75   80

Trp Xaa Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys
                85   90   95

Asp Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys
            100   105   110

Ile Val Lys Trp Asp Arg Asp Met
        115   120

<210> 1084
<211> 149
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<213> Homo sapiens

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<400> 1084
Pro Pro Ala Gly Thr Gly Pro Glu Phe Pro Gly Thr Ala Ala Arg Arg
1   5   10   15

Xaa Gln Lys Gly Ile Pro Glu Ala Asp Ser Ile Arg Ala Glu Met Ser
            20   25   30

Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser Gly Leu
35 40 45

Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg His Pro
50 55 60

Ala Glu Ser Gly Lys Ser Asn Phe Leu Asn Cys Tyr Val Ser Gly Phe
65 70 75 80

His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu Arg Ile
85 90 95

Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp Ser Phe
100 105 110

Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp Glu Tyr
115 120 125

Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile Val Lys
130 135 140

Trp Asp Arg Asp Met
145

<210> 1085
<211> 176
<212> PRT
<213> Homo sapiens

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Glu Xaa Pro Gly Xaa Asp Xaa Thr Arg Pro Xaa Xaa Lys Phe Leu Lys
1 5 10 15

Lys Lys Lys Lys Lys Lys Lys Lys Lys Gly Gly Arg Ser Arg Gly Ser
20 25 30

Lys Leu Thr Tyr Ala Cys Met Xaa Arg His Ser Ser Ser Ile Val Ser
35 40 45

Pro Lys Phe Asn Ser Leu Ala Val Val Leu Gln Arg Arg Asp Trp Glu
50 55 60

Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro Pro Phe
65 70 75 80

Ala Ser Trp Arg Asn Ser Xaa Xaa Ala Arg Thr Asp Arg Pro Ser Gln
85 90 95

Gln Leu Arg Xaa Leu Asn Gly Xaa Trp Asp Ala Pro Xaa Xaa Gly Ala
100 105 110

Leu Ser Ala Ala Xaa Glu Val Val Thr Xaa Ser Val Thr Ala Thr Leu
115 120 125

Ala Ser Ala Leu Ala Xaa Ala Pro Phe Ala Phe Phe Pro Xaa Phe Leu

130 135 140

Ala Xaa Phe Ala Gly Phe Pro Arg Gln Ala Leu Asn Arg Gly Leu Pro
145 150 155 160

Leu Gly Phe Arg Phe Ser Ala Leu Arg Xaa Leu Arg Pro Gln Lys Xaa
165 170 175

<210> 1086
<211> 166
<212> PRT
<213> Homo sapiens

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<400> 1086
Lys Lys Lys Xaa Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Gly Gly
1 5 10 15

Arg Xaa Arg Gly Ser Lys Leu Thr Tyr Ala Cys Met Arg Arg His Ser
20 25 30

Ser Ser Ile Val Ser Pro Lys Phe Asn Ser Leu Ala Val Val Leu Gln
35 40 45

Arg Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala
50 55 60

Ala His Pro Pro Phe Ala Ser Trp Arg Asn Ser Glu Glu Ala Arg Thr
65 70 75 80

Asp Arg Pro Ser Gln Gln Leu Xaa Ser Leu Asn Gly Glu Trp Asp Ala
85 90 95

Pro Cys Xaa Gly Ala Leu Ser Ala Ala Gly Val Val Val Thr Arg Ser
100 105 110

Val Thr Val Thr Leu Ala Ser Ala Leu Ala Pro Xaa Pro Phe Ala Phe
115 120 125

Phe Pro Ser Phe Leu Ala Thr Phe Ala Gly Phe Pro Arg Gln Ala Xaa
130 135 140

Asn Arg Gly Leu Pro Leu Gly Phe Arg Phe Ser Ala Leu Arg His Leu
145 150 155 160

Asp Pro Lys Lys Leu Asp
165

<210> 1087
<211> 154
<212> PRT
<213> Homo sapiens

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<400> 1087
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Pro Thr Arg Pro Pro Thr Arg Pro Lys Lys Lys Lys Lys Lys Lys Lys
  1               5                  10                  15

Lys Lys Lys Lys Lys Lys Lys Lys Gly Gly Arg Ser Lys Gly Ser Lys
             20                  25                  30

Leu Thr Tyr Ala Cys Met Gln Xaa His Xaa Ser Pro Ile Val Ser Pro
         35                  40                  45

Lys Phe Asn Xaa Leu Ala Val Val Leu Gln Arg Arg Asp Trp Glu Asn
     50                  55                  60

Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Xaa His Pro Pro Phe Ala
 65                  70                  75                  80

Ser Trp Xaa Xaa Xaa Xaa Lys Ala Arg Thr Asp Arg Pro Ser Gln Gln
                 85                  90                  95

Leu Arg Xaa Leu Asn Gly Lys Trp Asp Ala Pro Cys Tyr Gly Ala Leu
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100 105 110

Xaa Pro Xaa Gly Val Val Val Thr Pro Xaa Val Xaa Arg Tyr Thr Cys
115 120 125

Xaa Arg Pro Xaa Ala Arg Ser Phe Arg Phe Leu Pro Phe Leu Ser Arg
130 135 140

Gln Xaa Xaa Pro Xaa Phe Pro Val Xaa Leu
145 150

<210> 1088
<211> 166
<212> PRT
<213> Homo sapiens

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<400> 1088

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Phe Phe Ile Asn His Gly Cys Ser Gln Lys Lys Lys Xaa Lys Xaa Lys
  1               5                  10                  15

Lys Lys Lys Lys Lys Gly Gly Arg Ser Arg Gly Ser Lys Leu Thr Tyr
             20                  25                  30

Ala Cys Met Xaa Arg His Ser Ser Ser Ile Val Ser Pro Lys Phe Asn
         35                  40                  45

Ser Leu Ala Val Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly Val
     50                  55                  60

Thr Gln Leu Asn Arg Leu Ala Ala His Pro Pro Phe Ala Ser Trp Arg
 65                  70                  75                  80

Asn Ser Glu Xaa Ala Arg Thr Asp Arg Pro Ser Gln Gln Leu Arg Ser
                 85                  90                  95

Leu Asn Gly Glu Trp Asp Ala Pro Cys Ser Gly Ala Leu Ser Ala Ala
            100                 105                 110

Gly Val Val Val Thr Arg Ser Val Thr Xaa Thr Leu Xaa Ser Ala Leu
        115                 120                 125

Thr Pro Xaa Pro Phe Ala Phe Phe Pro Ser Phe Leu Pro Arg Ser Xaa
    130                 135                 140

Gly Phe Pro Ser Ser Ser Lys Ser Gly Ala Pro Leu Arg Val Xaa Ile
145                 150                 155                 160

Xaa Gly Phe Thr Gly Pro
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<210> 1089
<211> 104
<212> PRT
<213> Homo sapiens

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<400> 1089
Asn Lys Lys Lys Lys Lys Arg Ala Ala Ala Leu Glu Asp Pro Lys Leu
1 5 10 15

Thr Tyr Ala Cys Met Xaa Arg His Ser Ser Ser Ile Val Ser Pro Lys
20 25 30

Phe Asn Ser Leu Gly Arg Arg Phe Thr Thr Ser Val Thr Gly Lys Thr
35 40 45

Leu Ala Leu Pro Asn Leu Ile Arg Leu Ala Ala His Pro Pro Phe Ala
50 55 60

Ser Trp Arg Asn Ser Glu Glu Ala Arg Xaa Asp Arg Pro Ser Gln Gln

65 70 75 80

Leu Arg Met Leu Asn Gly Glu Trp Asp Xaa Pro Cys Xaa Gly Xaa Ile
85 90 95

Lys Ala Xaa Arg Val Trp Trp Leu
100

<210> 1090
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<212> PRT
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Pro Thr Xaa Pro Lys Lys Lys Lys Lys Xaa Lys Lys Lys Lys Lys Lys
1 5 10 15

Lys Lys Lys Xaa Gly Gly Arg Xaa Xaa Gly Ser Lys Leu Thr Tyr Ala
20 25 30

Cys Met Xaa Arg Xaa Ser Ser Ser Ile Xaa Ser Pro Lys Phe Asn Ser
35 40 45

Leu Ala Val Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly Val Thr
50 55 60

Gln Leu Asn Arg Leu Ala Ala His Pro Pro Phe Ala Ser Trp Arg Asn
65 70 75 80

Ser Glu Xaa Ala Arg Thr Asp Arg Pro Ser Gln Gln Leu Xaa Ser Leu

85 90 95

Asn Gly Xaa Trp Asp Ala Pro Cys Ser Gly Ala Leu Ser Ala Ala Gly
100 105 110

Val Xaa Val Thr Xaa Ser Xaa Thr Val Thr Leu Ala Ser Ala Leu Ala
115 120 125

Pro

<210> 1091
<211> 78
<212> PRT
<213> Homo sapiens

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<400> 1091
Glu Thr Ala Met Thr Met Ile Thr Pro Ser Ser Asn Thr Thr His Tyr
1   5   10   15

Arg Glu Ser Trp Tyr Ala Cys Arg Tyr Arg Ser Gly Ile Pro Gly Ser
20 25 30

Thr His Ala Ser Gly Xaa Xaa Xaa Xaa Gly Xaa Xaa Ser Xaa Xaa Xaa
35 40 45

Arg Lys Ile Val Gln Arg Gly Xaa Asn Glu Cys Gly Ser Arg Gly Xaa
50 55 60

Pro Xaa Ser Xaa Gly Xaa Xaa Ser Phe Gly Xaa Lys Lys Cys
65 70 75

<210> 1092
<211> 77
<212> PRT
<213> Homo sapiens

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<400> 1092
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Gly Gly Arg
1   5   10   15

Ser Xaa Gly Ser Lys Leu Thr Tyr Ala Cys Met Arg Arg His Ser Ser
            20   25   30

Xaa Ile Val Ser Pro Lys Phe Asn Ser Leu Ala Val Val Leu Gln Arg
        35   40   45

Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala
    50   55   60

Xaa Pro Pro Xaa Xaa Xaa Trp Xaa Ile Pro Lys Gly Pro
65   70   75

<210> 1093
<211> 93
<212> PRT
<213> Homo sapiens

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<400> 1093
Thr Phe Gln Asn Leu Lys Lys Lys Lys Lys Gly Gly Arg Ser Arg Gly
1   5   10   15

Ser Lys Leu Thr Tyr Ala Cys Met Arg Arg His Ser Ser Ser Ile Val
            20   25   30

Ser Pro Lys Phe Asn Ser Leu Ala Val Val Leu Gln Arg Arg Asp Trp
        35   40   45

Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His Xaa Pro
50 55 60

Phe Ala Ala Gly Val Ile Xaa Lys Arg Pro Xaa Arg Ser Pro Phe Pro
65 70 75 80

Thr Val Ala Gln Pro Glu Trp Arg Met Gly Arg Ala Leu
85 90

<210> 1094
<211> 44
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<400> 1094
Xaa Arg Pro Xaa Leu Glu Thr Pro Asp Tyr Arg Glu Ser Trp Tyr Ala
1 5 10 15

Cys Arg Tyr Arg Ser Gly Ile Pro Gly Ser Thr His Ala Ser Ala Arg
20 25 30

Leu Glu Ala Xaa Arg Arg Met Leu Gly Ile Ser Pro
35 40

<210> 1095
<211> 69
<212> PRT
<213> Homo sapiens

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<400> 1095
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Asn Val Pro Cys Lys Tyr Lys His Ile Leu Ser Glu Lys Lys Xaa Lys
  1               5                  10                  15

Lys Gly Gly Arg Ser Xaa Gly Ser Lys Leu Thr Tyr Ala Cys Met Arg
             20                  25                  30

Arg His Ser Ser Ser Ile Val Ser Pro Lys Phe Asn Ser Leu Ala Val
         35                  40                  45

Val Leu Gln Arg Arg Asp Trp Glu Lys Pro Trp Ala Leu Pro Asn Leu
     50                  55                  60

Xaa Xaa Xaa Cys Xaa
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<210> 1096
<211> 48
<212> PRT
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<400> 1096
Gly Xaa Xaa Ser Thr Val Xaa Ile Pro Gly Ser Arg Asp Pro Ser Leu
1 5 10 15

Arg Thr Xaa His Ala Arg His Ser Ser Ser Ile Val Ser Pro Lys Phe
20 25 30

Asn Ser Leu Ala Val Val Leu Gln Arg Arg Asp Trp Glu Asn Xaa Xaa
35 40 45

<210> 1097
<211> 47
<212> PRT
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<400> 1097
Lys Xaa Xaa Lys Xaa Gly Gly Arg Ser Arg Gly Ser Lys Leu Thr Tyr
1 5 10 15

Ala Xaa Met Arg Arg His Ser Ser Ser Ile Gly Ser Pro Lys Phe Asn
20 25 30

Ser Leu Ala Val Val Leu Gln Arg Xaa Asp Trp Glu Asn Pro Gly
35 40 45

<210> 1098
<211> 48
<212> PRT
<213> Homo sapiens

<400> 1098
Ser Glu Thr Pro Ser Gln Lys Lys Lys Lys Lys Thr Arg Gly Gly Ala
1 5 10 15

Arg Tyr Pro Ile Arg Pro Ile Val Ser Arg Ile Thr Ile Pro Leu Ala
20 25 30

Val Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly Arg Tyr Pro Thr
35 40 45

<210> 1099
<211> 66
<212> PRT
<213> Homo sapiens

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<400> 1099
Thr Xaa Xaa Lys Lys Lys Arg Ala Ala Ala Leu Xaa Asp Pro Ser Leu

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  1               5                   10                  15
Arg Thr Pro Cys Met Arg Arg His Asn Ser Ser Ile Gly Ala Pro Lys
            20                  25                  30
Phe Asn Ser Leu Ala Arg Arg Leu Gln Arg Leu Thr Gly Lys Thr Leu
        35                  40                  45
Ala Leu Pro Asn Leu Ile Xaa Leu Gln Xaa Ile Pro Phe Xaa Gln Leu
    50                  55                  60
Xaa Xaa
 65
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<210> 1100
<211> 71
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<400> 1100
Met Leu Asn Tyr Phe Gln Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
1 5 10 15

Gly Gly Xaa Ser Xaa Gly Ser Lys Leu Thr Tyr Xaa Cys Met Gln Xaa
20 25 30

Xaa Xaa Ser Ser Ile Val Ser Pro Lys Phe Asn Xaa Leu Ala Val Asp
35 40 45

Xaa Gln Arg Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg
50 55 60

Leu Ala Ala His Pro Pro Xaa
65 70

<210> 1101
<211> 114
<212> PRT
<213> Homo sapiens

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<400> 1101
Pro Val Ser Arg Arg Ser Xaa Xaa Xaa Lys Lys Xaa Xaa Lys Lys Asn
1 5 10 15

Ser Lys Ser Phe Ser Xaa Val Leu Leu Xaa Arg Pro Arg Ala His Xaa
20 25 30

Phe Ser Thr Arg Val Gly Tyr Gln Val Ser Val Pro Asn Ser Pro Tyr
35 40 45

Ser Glu Ser Tyr Tyr Asn Ser Leu Ala Val Val Leu Gln Arg Xaa Asp
50 55 60

Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro
65 70 75 80

Pro Phe Ala Ser Trp Arg Asn Xaa Glu Lys Gly Arg Xaa Asp Arg Pro
85 90 95

Ser Gln Gln Phe Ala Xaa Pro Glu Met Ala Asn Gly Asn Gln Phe Leu
100 105 110

Xaa Val

<210> 1102
<211> 152
<212> PRT
<213> Homo sapiens

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<400> 1102
Asn Xaa Lys Lys Lys Lys Xaa Lys Lys Lys Xaa Lys Lys Lys Gly Gly
1 5 10 15

Arg Ser Lys Gly Ser Lys Leu Thr Tyr Ala Cys Met Xaa Arg His Xaa
20 25 30

Ser Ala Ile Val Ser Pro Lys Phe Asn Ser Leu Ala Val Val Leu Gln
35 40 45

Arg Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala
50 55 60

Xaa His Pro Pro Phe Ala Arg Trp Arg Asn Ser Xaa Lys Ala Arg Xaa
65 70 75 80

Asp Arg Pro Ser Gln Gln Leu Xaa Xaa Leu Asn Gly Xaa Xaa Xaa Ala
85 90 95

Pro Cys Xaa Gly Ala Leu Ser Ala Ala Gly Val Val Val Thr Xaa Arg

```
            100                 105                 110

Val Thr Ala Xaa Leu Xaa Xaa Ala Leu Ala Pro Gly Pro Phe Xaa Phe
        115                 120                 125

Phe Pro Ser Phe Leu Ala Thr Phe Ala Gly Phe Pro Arg Gln Ala Leu
    130                 135                 140

Asn Arg Gly Val Pro Phe Xaa Val
145                 150
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<210> 1103
<211> 143
<212> PRT
<213> Homo sapiens

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<400> 1103
Ile Asn Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Gly
1 5 10 15

Gly Arg Ser Xaa Gly Ser Lys Leu Thr Tyr Ala Cys Met Xaa Arg His
20 25 30

Ser Ser Ser Ile Xaa Ser Pro Lys Phe Asn Ser Leu Ala Val Val Leu
35 40 45

Gln Arg Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu
50 55 60

Ala Ala His Pro Pro Phe Ala Ser Trp Arg Asn Ser Glu Lys Ala Arg
65 70 75 80

Thr Asp Arg Pro Ser Gln Gln Leu Arg Ser Leu Asn Gly Glu Trp Asp
85 90 95

Ala Pro Cys Xaa Gly Ala Leu Ser Ala Ala Gly Val Val Val Thr Arg
100 105 110

Ser Val Thr Val Thr Leu Ala Ser Ala Leu Xaa Pro Ala Pro Phe Val
115 120 125

Ser Ser Leu Xaa Phe Ser Xaa Arg Ser Pro Val Ser Pro Leu Xaa
130 135 140

<210> 1104
<211> 93
<212> PRT
<213> Homo sapiens

<400> 1104
Arg Lys Lys Lys Lys Lys Gly Gly Arg Ser Arg Gly Ser Lys Leu Thr
1 5 10 15

Tyr Ala Cys Met Arg Arg His Ser Ser Ser Ile Val Ser Pro Lys Phe
20 25 30

Asn Ser Leu Ala Val Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly
35 40 45

Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro Pro Phe Ala Ser Trp
50 55 60

Arg Asn Ser Glu Glu Ala Arg Thr Asp Arg Pro Ser Gln Gln Leu Arg
65 70 75 80

Ser Leu Asn Gly Glu Trp Asp Ala Pro Cys Thr Ala His
85 90

<210> 1105
<211> 55
<212> PRT
<213> Homo sapiens

<400> 1105
Ile Arg Gln Arg Tyr Ser Trp Leu Ile Asn Gly Thr Phe Gln Gln Ser
1 5 10 15

Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr Val Asn Asn Ser Gly Ser
20 25 30

Tyr Thr Cys His Ala Asn Asn Ser Val Thr Gly Cys Asn Arg Ala Thr
35 40 45

Val Lys Thr Met His Ser His
50 55

<210> 1106
<211> 73
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (30)
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<400> 1106
Pro Trp His Val Phe Cys Ile Ser Gly Arg Pro Ala Ala Gln Asp His
1 5 10 15

Ser Asn Asp Pro Pro Asn Lys Met Asn Glu Val Thr Tyr Xaa Thr Leu
20 25 30

Asn Phe Glu Xaa Xaa Gln Pro Thr Gln Pro Thr Ser Ala Ser Pro Ser
35 40 45

Leu Thr Ala Thr Glu Xaa Ile Tyr Ser Arg Ser Lys Lys Xaa Val Met
50 55 60

Lys Pro Gly Pro Ala Xaa Cys Ser Ala
65 70

<210> 1107
<211> 137
<212> PRT
<213> Homo sapiens

<220>
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<400> 1107
Ser Ser His Asn Arg Val Asn Ala Arg Leu Ala Gly Ala Pro Ser Glu
1 5 10 15

Asp Pro Gln Phe Pro Lys Val Gln Trp Pro Pro Arg Glu Leu Cys Ser
20 25 30

Ala Cys His Asn Glu Arg Leu Asp Val Pro Val Trp Asp Val Glu Ala
35 40 45

Thr Leu Asn Phe Leu Lys Ala His Phe Ser Pro Ser Asn Ile Ile Leu
50 55 60

Asp Phe Pro Ala Ala Gly Ser Thr Cys Pro Arg Asp Val Gln Asn Val
65 70 75 80

Ala Ser Arg Pro Lys Leu Ala Met Gly Ala Leu Glu Leu Glu Ser Arg
85 90 95

Asn Ser Thr Leu Asp Pro Gly Lys Pro Glu Met Met Lys Ser Pro Thr
100 105 110

Asn Thr Thr Pro His Val Pro Ala Xaa Gly Pro Glu Ala Ser Arg Pro
115 120 125

Pro Lys Leu Ala Pro Trp Pro Lys Thr
130 135

<210> 1108
<211> 39
<212> PRT
<213> Homo sapiens

<400> 1108
Gln Tyr Lys Gly Ser Trp Pro Ala Leu Gln Leu Gln His Leu Pro His
1 5 10 15

Pro Glu Trp Glu Ser Gly Gly Ala Thr Cys Trp Ala Pro Pro Glu Leu
20 25 30

Cys Thr His Leu Ala Met Tyr
35

<210> 1109
<211> 31
<212> PRT
<213> Homo sapiens

<400> 1109
Ala Asp Phe Asp Arg Phe Lys Val Met Lys Ala Lys Lys Met Arg Asn
1 5 10 15

Arg Ile Ile Lys Asn Glu Leu Arg Ser Phe Lys Arg Gln Leu Ser
20 25 30

<210> 1110
<211> 71
<212> PRT
<213> Homo sapiens

<220>
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<400> 1110
Lys Ile Met Ala Ser Pro Asp Trp Gly Tyr Asp Asp Lys Xaa Gly Pro
1 5 10 15

Glu Gln Trp Ser Lys Leu Tyr Pro Ile Ala Asn Gly Asn Xaa Gln Ser
20 25 30

Pro Val Asp Ile Xaa Xaa Ser Glu Thr Lys His Asp Thr Ser Leu Xaa
35 40 45

Pro Ile Ser Val Ser Tyr Asn Pro Xaa Thr Xaa Lys Glu Ile Xaa Gln
50 55 60

Cys Gly Gly Ile Pro Ser Met
65 70

<210> 1111
<211> 88
<212> PRT
<213> Homo sapiens

<220>
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<400> 1111
Lys Ile Met Ala Ser Pro Asp Trp Gly Tyr Asp Asp Lys Asn Gly Pro
1 5 10 15

Glu Gln Trp Ser Lys Leu Tyr Pro Ile Ala Asn Gly Asn Asn Gln Ser
20 25 30

Pro Val Asp Ile Lys Thr Ser Glu Thr Lys His Asp Thr Ser Leu Lys
35 40 45

Pro Ile Ser Val Ser Tyr Asn Pro Ala Thr Ala Lys Glu Ile Ile Asn
50 55 60

Val Gly His Ser Phe His Val Asn Phe Glu Asp Asn Asp Xaa Arg Ser
65 70 75 80

Ser Ala Glu Arg Trp Ser Phe Leu
85

<210> 1112
<211> 120
<212> PRT
<213> Homo sapiens

<220>
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<400> 1112
Gly Ala Asp Ser Cys Pro Ala Pro Thr Ala Xaa Arg Thr Xaa Ser His
1 5 10 15

Xaa Trp Gly Tyr Gly Lys His Asn Gly Pro Lys His Trp His Lys Asp
20 25 30

Phe Pro Ile Ala Lys Gly Arg Ala Pro Val Pro Leu Leu Xaa Ser Thr
35 40 45

Leu His Thr Ala Lys Xaa Glu Pro Phe Xaa Glu Ser Pro Cys Leu Phe

50 55 60

Pro Met Asn Gln Ala Thr Ser Leu Arg Ile Leu Asn Asn Gly His Ala
65 70 75 80

Phe Asn Val Gly Val Xaa Met Thr Leu Xaa Asp Lys Ala Val Leu Gln
85 90 95

Gly Lys Asp Pro Trp Val Gly His Phe Thr Asp Trp Phe Ser Phe Phe
100 105 110

Gln Phe Ser Met Gly Val Ser Ile
115 120

<210> 1113
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
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<400> 1113
Met Leu Leu Glu Asn Lys Ala Ser Ile Phe Gly Gly Gly Leu Pro Ala
1 5 10 15

Pro Tyr Gln Val Lys Xaa Leu His Leu His Trp Ser Asp Leu Pro Tyr
20 25 30

Lys Gly Ser Xaa His Ser Leu Glu Trp Gly Ala Leu Cys His Gly Arg
35 40 45

Cys Thr
50

<210> 1114
<211> 84
<212> PRT
<213> Homo sapiens

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<400> 1114
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Lys Pro Phe Lys Met Ile Pro Gly Val Val Asp Gly Val Phe Leu Pro
  1               5                  10                  15

Arg His Pro Gln Xaa Leu Leu Ala Ser Ala Asp Phe Gln Pro Val Pro
             20                  25                  30

Xaa Ile Val Gly Val Asn Asn Asn Glu Phe Gly Trp Leu Ile Pro Lys
         35                  40                  45

Val Met Xaa Ile Tyr Asp Thr Gln Xaa Glu Met Asp Arg Xaa Ala Ser
     50                  55                  60

Xaa Ala Ala Leu Gln Lys Met Leu Thr Leu Leu Ile Cys Leu Leu His
 65                  70                  75                  80

Leu Val Thr Cys
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<210> 1115
<211> 40
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<213> Homo sapiens

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<400> 1115
Cys Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr Val Asn Asn Arg Gly
1 5 10 15

Ser Xaa Xaa Cys Gln Ala His Asn Ser Thr Leu Ala Leu Ile Gly Ala
20 25 30

Gln Ser Arg Ile Ser Xaa Ser Met
35 40

<210> 1116
<211> 151
<212> PRT
<213> Homo sapiens

<220>
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<222> (132)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1116
Gly Thr Ala Glu Leu Thr Val Thr Ala Ala Leu Thr Arg Glu Phe Leu
1 5 10 15

Glu Pro Lys Leu Phe Ser Thr Glu Asp Lys Gln Ala Ala Glu Thr Met
20 25 30

Gly Ser Pro Ser Ala Cys Pro Tyr Arg Val Cys Ile Pro Trp Gln Gly
35 40 45

Leu Leu Leu Thr Ala Ser Leu Leu Thr Phe Trp Asn Leu Pro Asn Ser
50 55 60

Ala Gln Thr Asn Ile Asp Val Val Pro Phe Asn Val Ala Glu Gly Lys
65 70 75 80

Glu Val Leu Leu Val Val His Asn Glu Ser Gln Asn Leu Tyr Gly Tyr
85 90 95

Asn Trp Tyr Lys Gly Glu Arg Val His Ala Asn Tyr Arg Ile Ile Gly
100 105 110

Tyr Cys Lys Lys Tyr Lys Ser Arg Lys Cys Pro Arg Pro Asp Thr Thr
115 120 125

Ser Arg Asp Xaa Tyr Pro Met Glu Pro Cys Val Pro Xaa Val Pro His
130 135 140

Ala Gln Asp Phe Ser Ser Leu
145 150

<210> 1117
<211> 115
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<222> (113)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1117
Arg Glu Gln Lys Leu Glu Leu His Arg Gly Ala Thr Ala Leu Glu Leu
1 5 10 15

Val Asp Pro Pro Gly Cys Arg Asn Ser Ala Arg Gly Arg Pro Gly Leu
20 25 30

```
Ala Arg Xaa Pro Arg Arg Gly Leu Glu Ala Arg Pro Gly Ala Pro Glu
        35                  40                  45

Arg Glu Ser Glu Arg Arg Arg Gly Asp Gln Ile Asn Ala Ser Lys Asn
    50                  55                  60

Glu Glu Asp Ala Gly Lys Met Phe Val Gly Gly Leu Ser Trp Asp Thr
65                  70                  75                  80

Ser Lys Lys Asp Leu Lys Asp Tyr Phe Thr Lys Phe Gly Glu Val Val
                85                  90                  95

Asp Cys Thr Ile Lys Met Asp Pro Asn Thr Gly Arg Ser Arg Gly Phe
            100                 105                 110

Xaa Phe Ile
        115
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<210> 1118
<211> 50
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<222> (29)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1118
Arg Pro Thr Xaa Pro Gly Arg Thr Met Ala Arg Gly Ala Xaa Leu Xaa
1 5 10 15

Leu Leu Leu Xaa Gly Leu Leu Gly Val Leu Val Xaa Xaa Pro Asp Gly
20 25 30

Gly Phe Asp Leu Ser Asp Ala Leu Xaa Asp Asn Glu Asn Lys Lys Pro
35 40 45

Thr Ala
50

<210> 1119
<211> 147
<212> PRT
<213> Homo sapiens

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<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (11)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (13)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (95)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1119
Xaa Ser Glu Cys Lys Ser Pro Ser Glu Pro Xaa Ile Xaa Lys Arg Val

1 5 10 15

Gly Leu Ile His Ile Ser Gln Val Ile Ser Glu Ile Asp Gly Asn Arg
20 25 30

Met Thr Leu Ser Gln Glu Gly Ala Gln Asp Ser Phe Pro Leu Gln Gln
35 40 45

Lys Ile Leu Val Cys Ser Leu Met Leu Leu Ile Arg Gln Leu Lys Ile
50 55 60

Lys Glu Val Thr Leu Gly Lys Leu Tyr Glu Ala Tyr Ser Lys Val Cys
65 70 75 80

Arg Lys Gln Gln Val Ala Ala Val Asp Gln Ser Glu Cys Leu Xaa Leu
85 90 95

Ser Gly Leu Leu Glu Ala Arg Gly Ile Leu Gly Leu Lys Arg Asn Lys
100 105 110

Glu Thr Arg Leu Thr Lys Val Phe Phe Lys Ile Glu Glu Lys Glu Ile
115 120 125

Glu His Ala Leu Lys Asp Lys Ala Leu Ile Gly Asn Ile Leu Ala Thr
130 135 140

Gly Leu Pro
145

<210> 1120
<211> 45
<212> PRT
<213> Homo sapiens

<400> 1120
His Glu Arg Asn Met Glu Arg Leu Thr Leu Ala Cys Gly Gly Val Ala
1 5 10 15

Leu Asn Ser Phe Glu Asp Leu Ser Pro Asp Cys Leu Gly His Ala Gly
20 25 30

Leu Val Tyr Glu Tyr Thr Leu Gly Glu Val His Leu Tyr
35 40 45

<210> 1121
<211> 67
<212> PRT

<213> Homo sapiens

<220>
<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (52)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (53)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (66)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1121
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Asn Trp Arg Met Arg Met Xaa His Val Met Leu Pro Lys Asp Ile Ala
  1               5                  10                  15

Lys Leu Val Pro Lys Thr His Leu Met Ser Glu Ser Glu Trp Arg Asn
             20                  25                  30

Leu Gly Val Gln Gln Ser Gln Gly Trp Val His Tyr Met Ile His Glu
         35                  40                  45

Pro Glu Pro Xaa Xaa Leu Leu Phe Arg Gly His Xaa Gln Glu Pro Arg
     50                  55                  60

Asn Xaa Val
 65
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<210> 1122
<211> 64
<212> PRT
<213> Homo sapiens

<220>

<221> SITE
<222> (13)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (19)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<220>
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<222> (25)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (28)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (42)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (47)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (64)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1122
Ser Cys Cys Leu Gly Trp Thr Trp Phe Cys Leu Leu Xaa Pro Leu Leu
1 5 10 15

Xaa Leu Xaa Xaa Asn Xaa Xaa Gln Xaa Ala Ser Xaa Met Val His Lys
20 25 30

Gln Ile Tyr Tyr Ser Asp Lys Tyr Xaa Xaa Glu His Tyr Glu Xaa Arg
35 40 45

Asp Gly Met Leu Pro Arg Glu Leu Asp Lys Gln Xaa Pro Lys Thr Xaa
50 55 60

<210> 1123
<211> 155
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (10)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (15)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (31)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (143)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1123
Gln Leu Val Gly Pro Pro Gly Leu Gln Xaa Phe Gly Ser Xaa Xaa Lys
1 5 10 15

Pro Tyr Gly Val Thr Ala Met Cys Trp Asn Trp Glu Gln Val Xaa Ala
20 25 30

Ala Gly Arg His Pro Glu Ser Arg Pro Phe Arg Phe Thr Gly Ala Ala
35 40 45

Thr Ser Pro Arg Ser Ser Cys Ser Arg Ala Cys Ile Val Lys Val Val
50 55 60

Arg Arg Arg Leu Ala Glu Lys Arg Ile Gly Val Arg Asp Val Arg Leu
65 70 75 80

Asn Gly Ser Ala Ala Ser His Val Leu His Gln Asp Ser Gly Leu Gly
85 90 95

Tyr Lys Asp Leu Asp Leu Ile Phe Cys Ala Asp Leu Arg Gly Glu Gly
100 105 110

Glu Phe Gln Thr Val Lys Asp Val Val Leu Asp Cys Leu Leu Asp Phe
115 120 125

Leu Pro Glu Gly Val Asn Lys Glu Lys Ile Thr Pro Leu Thr Xaa Lys
130 135 140

Glu Ala Tyr Val Gln Lys Met Val Lys Val Cys
145 150 155

<210> 1124
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (7)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (87)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (97)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (99)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (110)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1124
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Ala Lys Ser Phe Glu Tyr Xaa Ala Arg Ile Phe Lys Gln His Phe Met
  1               5                  10                  15

Asp Ser Arg Ile Pro Cys Leu Ile Val Ala Ala Lys Ser Asp Leu His
             20                  25                  30

Glu Val Lys Gln Glu Tyr Ser Ile Ser Pro Thr Asp Phe Cys Arg Lys
         35                  40                  45

His Lys Met Pro Pro Pro Gln Ala Phe Thr Cys Asn Thr Ala Asp Ala
     50                  55                  60

Pro Ser Lys Asp Ile Phe Gly Lys Leu Thr Thr Met Ala Met Tyr Pro
 65                  70                  75                  80

His Ala Arg Leu Arg Cys Xaa Cys Thr Cys Asn Arg Cys Thr Phe Cys
                 85                  90                  95

Xaa Cys Xaa Asn Phe Leu Asn Leu Tyr Phe Ala Ala Asn Xaa Val Lys
            100                 105                 110

Glu Gln Lys Ser Phe
        115
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<210> 1125
<211> 169

<212> PRT
<213> Homo sapiens

<400> 1125
Ile Met Lys Leu Leu Thr Arg Ala Gly Ser Phe Ser Arg Phe Tyr Ser
1 5 10 15

Leu Lys Val Ala Pro Lys Val Lys Ala Thr Ala Ala Pro Ala Gly Ala
20 25 30

Pro Pro Gln Pro Gln Asp Leu Glu Phe Thr Lys Leu Pro Asn Gly Leu
35 40 45

Val Ile Ala Ser Leu Glu Asn Tyr Ser Pro Val Ser Arg Ile Gly Leu
50 55 60

Phe Ile Lys Ala Gly Ser Arg Tyr Glu Asp Phe Ser Asn Leu Gly Thr
65 70 75 80

Thr His Leu Leu Arg Leu Thr Ser Ser Leu Thr Thr Lys Gly Ala Ser
85 90 95

Ser Phe Lys Ile Thr Arg Gly Ile Glu Ala Val Gly Gly Lys Leu Ser
100 105 110

Val Thr Ala Thr Arg Glu Asn Met Ala Tyr Thr Val Glu Cys Leu Arg
115 120 125

Gly Asp Val Asp Ile Leu Met Glu Phe Leu Leu Asn Val Thr Thr Ala
130 135 140

Pro Glu Phe Arg Arg Trp Glu Val Ala Asp Leu Gln Pro Gln Leu Lys
145 150 155 160

Ile Asp Lys Ala Val Ala Phe Gln Asn
165

<210> 1126
<211> 56
<212> PRT
<213> Homo sapiens

<400> 1126
Pro Pro Val Val His Lys Asn Pro Ile His Ile Lys Thr Pro Ser Pro
1 5 10 15

Cys Leu Gln Ala Ser Thr Ala Ile Asn Pro Gln Leu Ser His Ile Asn
20 25 30

Cys Asn Ser Lys Ala Thr Pro His Pro Leu Gly Tyr Gln Gln Thr Tyr
35 40 45

Pro Pro Leu Thr Val His Ser Thr
50 55

<210> 1127
<211> 195
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (39)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1127
Arg Glu Gln Lys Leu Glu Leu His Arg Gly Ala Ala Ala Leu Glu Leu
1 5 10 15

Val Asp Pro Pro Gly Cys Arg Asn Ser Ala Arg Ala Gly Gly Cys Val
20 25 30

Leu Gly Lys Ala Gly Gly Xaa Gly Gly Arg Leu Phe Tyr Gly Ser Arg
35 40 45

Asp Arg Pro Val Leu Leu Pro Phe Pro Pro Ser Leu Pro Pro Leu Ser
50 55 60

Arg Arg Gly Ala Ala Ala Ala Leu Asp Phe Ala Val Phe Pro Arg Gly
65 70 75 80

Asp Arg Phe Gln His Tyr Thr Cys Thr Met Ser Leu Lys Pro Arg Val
85 90 95

Val Asp Phe Asp Glu Thr Trp Asn Lys Leu Leu Thr Thr Ile Lys Ala
100 105 110

Val Val Met Leu Glu Tyr Val Glu Arg Ala Thr Trp Asn Asp Arg Phe
115 120 125

Ser Asp Ile Tyr Ala Leu Cys Val Ala Tyr Pro Glu Pro Leu Gly Glu
130 135 140

Arg Leu Tyr Thr Glu Thr Lys Ile Phe Leu Glu Asn His Val Arg His
145 150 155 160

Leu His Lys Arg Val Leu Glu Ser Glu Glu Gln Val Leu Val Met Tyr
165 170 175

His Arg Tyr Trp Glu Glu Tyr Ser Lys Gly Ala Asp Tyr Met Asp Cys
180 185 190

Leu Tyr Arg
195

<210> 1128
<211> 130
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (116)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (122)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1128
Ser Ile Ile Asp Arg Phe Met Gln Asn Asn Cys Val Pro Lys Lys Met
1 5 10 15

Leu Gln Leu Val Gly Val Thr Ala Met Phe Ile Ala Ser Lys Tyr Glu
20 25 30

Glu Met Tyr Pro Pro Glu Ile Gly Asp Phe Ala Phe Val Thr Asp Asn
35 40 45

Thr Tyr Thr Lys His Gln Ile Arg Gln Met Glu Met Lys Ile Leu Arg
50 55 60

Ala Leu Asn Phe Gly Leu Gly Arg Pro Leu Pro Leu His Phe Leu Arg
65 70 75 80

Arg Ala Ser Lys Ile Gly Glu Val Asp Val Glu Gln His Thr Leu Ala
85 90 95

Lys Tyr Leu Met Glu Leu Thr Met Leu Asp Tyr Asp Met Val His Phe
100 105 110

Pro Pro Ser Xaa Ile Ala Ala Gly Ala Xaa Cys Leu Ala Leu Lys Ile
115 120 125

Leu Gly
130

<210> 1129
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (90)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1129
Gly Asp Glu Glu Ala Cys Pro Glu Asp Lys Gly Pro Gln Asp Pro Gln
1 5 10 15

Ala Leu Ala Leu Asp Thr Gln Ile Pro Ala Thr Pro Gly Pro Lys Pro
20 25 30

Leu Val Arg Thr Ser Arg Glu Pro Gly Lys Asp Val Thr Thr Ser Gly
35 40 45

Tyr Ser Ser Val Ser Thr Ala Ser Pro Thr Ser Ser Val Asp Gly Gly
50 55 60

Leu Gly Ala Leu Pro Gln Pro Thr Ser Val Leu Ser Leu Asp Ser Asp
65 70 75 80

Ser His Thr Gln Pro Cys His His Gln Xaa Arg Lys Ser Cys Leu Gln
85 90 95

Cys Arg Pro Pro Ser Pro Pro Glu Ser Ser Val Pro Gln Gln Gln Val
100 105 110

Lys Arg Ile Asn Tyr Ala Tyr Thr Val Lys Arg Arg Thr
115 120 125

<210> 1130
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1130

Xaa Thr Arg Pro Pro Thr Arg Pro Pro Thr Arg Pro Gln Ile Pro Ser
1   5   10   15

Val Ala Ala Lys Met Met Cys Gly Ala Pro Ser Ala Thr Gln Pro Ala
            20   25   30

Thr Ala Glu Thr Gln His Ile Ala Asp Gln Val Arg Ser Gln Leu Glu
        35   40   45

Glu Lys Glu Asn Lys Lys Phe Pro Val Phe Lys Ala Val Ser Phe Lys
    50   55   60

Ser Gln Val Val Ala Gly Thr Asn Tyr Phe Ile Lys Val His Val Gly
65   70   75   80

Asp Glu Asp Phe Val His Leu Arg Val Phe Gln Ser Leu Pro His Glu
                85   90   95

Asn Lys Pro Leu Thr Leu Ser Asn Tyr Gln Thr Asn Lys Ala Lys His
            100   105   110

Asp Glu Leu Thr Tyr Phe
        115

<210> 1131
<211> 64
<212> PRT
<213> Homo sapiens

<400> 1131
Ala Val Pro Thr Leu Gly Leu Lys Thr Asp Ala Ile Pro Gly Arg Leu
1   5   10   15

Asn Gln Thr Thr Phe Thr Ala Thr Arg Pro Gly Val Tyr Tyr Gly Gln
            20   25   30

Cys Ser Glu Ile Cys Gly Ala Asn His Ser Phe Met Pro Ile Val Leu
        35   40   45

Glu Leu Ile Pro Leu Lys Ile Phe Glu Ile Gly Pro Val Phe Thr Leu
    50   55   60

<210> 1132
<211> 35

<212> PRT
<213> Homo sapiens

<400> 1132
Ala Arg Ala His Lys Glu Ile Tyr Pro Tyr Val Ile Gln Glu Leu Arg
1 5 10 15

Pro Thr Leu Asn Glu Leu Gly Ile Ser Thr Pro Glu Glu Leu Gly Leu
20 25 30

Asp Lys Val
35

<210> 1133
<211> 69
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (26)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (61)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (66)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1133
Pro Tyr Thr Asn Asp Gly Ala Met Xaa His Glu Glu Ser Thr Tyr Gln
1 5 10 15

Gly His His Thr Pro Pro Val Gln Lys Xaa Leu Arg Tyr Gly Ile Ile
20 25 30

Leu Phe Ile Thr Ser Glu Val Phe Phe Phe Ala Gly Phe Ser Glu Leu
35 40 45

Leu His Ser Ser Leu Ala Leu Pro Pro Thr Lys Lys Xaa Leu Ala Pro

50 55 60

Thr Xaa Ile Thr Arg
65

<210> 1134
<211> 64
<212> PRT
<213> Homo sapiens

<400> 1134
Ala Val Pro Thr Leu Gly Leu Lys Thr Asp Ala Ile Pro Gly Arg Leu
1 5 10 15

Asn Gln Thr Thr Phe Thr Ala Thr Arg Pro Gly Val Tyr Tyr Gly Gln
20 25 30

Cys Ser Glu Ile Cys Gly Ala Asn His Ser Phe Met Pro Ile Val Leu
35 40 45

Glu Leu Ile Pro Leu Lys Ile Phe Glu Ile Gly Pro Val Phe Thr Leu
50 55 60

<210> 1135
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (3)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1135
Thr Tyr Xaa Val His Arg Leu Arg Arg Thr Asn Leu Gln Leu Leu His
1 5 10 15

Thr Ser Pro Leu Phe Leu Glu Pro Gly Asp Leu Arg Leu Leu Asp Val
20 25 30

Asp Asn Arg Val Val Leu Pro Ile Glu Ala Pro Ile Arg Ile Ile Ile
35 40 45

Thr Ser Gln Asp Val Leu His Ser

50 55

<210> 1136
<211> 60
<212> PRT
<213> Homo sapiens

<400> 1136
Ala Gln Val Gly Leu Gln Asp Ala Thr Ser Pro Ile Ile Glu Glu Leu
1 5 10 15

Ile Thr Phe His Asp His Ala Leu Ile Ile Ile Phe Leu Ile Cys Phe
20 25 30

Leu Val Leu Tyr Ala Leu Phe Leu Thr Leu Thr Thr Lys Leu Thr Asn
35 40 45

Thr Asn Ile Ser Asp Ala Gln Glu Ile Glu Thr Val
50 55 60

<210> 1137
<211> 49
<212> PRT
<213> Homo sapiens

<400> 1137
Thr Tyr Glu Tyr Thr Asp Tyr Gly Gly Leu Ile Phe Asn Ser Tyr Ile
1 5 10 15

Leu Pro Pro Leu Phe Leu Glu Pro Gly Asp Leu Arg Leu Leu Asp Val
20 25 30

Asp Asn Arg Val Val Leu Pro Ile Glu Ala Pro Ile Arg Ile Ile Ile
35 40 45

Asn

<210> 1138
<211> 80
<212> PRT
<213> Homo sapiens

<220>
<221> SITE

<222> (74)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (79)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (80)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1138

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Ala Val Pro Thr Leu Gly Leu Lys Thr Asp Ala Ile Pro Gly Arg Leu
  1               5                  10                  15

Asn Gln Thr Thr Phe Thr Ala Thr Arg Pro Gly Val Tyr Tyr Gly Gln
             20                  25                  30

Cys Ser Glu Ile Cys Gly Ala Asn His Ser Phe Met Pro Ile Val Leu
         35                  40                  45

Glu Leu Ile Pro Leu Lys Ile Phe Gly Asn Arg Ala Arg Ile Tyr Pro
     50                  55                  60

Ile Ala Pro Pro Leu Pro Pro Leu Glu Xaa Lys Lys Lys Lys Xaa Xaa
 65                  70                  75                  80
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<210> 1139
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (51)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (70)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1139
Phe Glu Ala Asn Asp Pro Ser Leu Thr Ile Lys Ser Ile Gly His Gln
1 5 10 15

Xaa Tyr Arg Thr Tyr Glu Tyr Thr Asp Tyr Gly Gly Leu Ile Phe Asn
20 25 30

Ser Tyr Ile Leu Pro Pro Leu Phe Leu Glu Pro Gly Asp Leu Arg Leu
35 40 45

Leu Asp Xaa Asp Asn Arg Val Val Leu Pro Ile Glu Thr Pro Ile Arg
50 55 60

Ile Ile Ile Thr Tyr Xaa Asp Val Leu His Ser
65 70 75

<210> 1140
<211> 200
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1140
His Xaa Pro Ser Leu Lys Gly Thr Lys Ala Gly Ala Pro Pro Arg Cys
1 5 10 15

Gly Arg Ser Arg Thr Ser Gly Ser Pro Gly Leu Gln Glu Phe Gly Thr
20 25 30

Arg Glu Trp Arg Leu Pro Ser Leu Arg Arg Ala Thr Leu Trp Ile Pro
35 40 45

Gln Trp Phe Ala Lys Lys Ala Ile Phe Asn Ser Pro Leu Glu Ala Ala
50 55 60

Met Ala Phe Pro His Leu Gln Gln Pro Ser Phe Leu Leu Ala Ser Leu
65 70 75 80

Lys Ala Asp Ser Ile Asn Lys Pro Phe Ala Gln Gln Cys Gln Asp Leu
85 90 95

Val Lys Val Ile Glu Asp Phe Pro Ala Lys Ser Glu Pro Ile Arg Val

100 105 110

Leu Val Thr Gly Ala Ala Gly Gln Ile Ala Tyr Ser Leu Leu Tyr Ser
115 120 125

Ile Gly Asn Gly Ser Val Phe Gly Lys Asp Gln Met Ser Ser Gln Gln
130 135 140

Ile Lys Lys Thr Leu Pro Ser Lys Thr Trp Asp Val Ala Ile Leu Val
145 150 155 160

Gly Ser Met Pro Arg Arg Glu Gly Met Glu Arg Lys Asp Leu Leu Lys
165 170 175

Ala Asn Val Lys Ile Phe Lys Ser Gln Gly Ala Ala Leu Asp Lys Tyr
180 185 190

Gly Lys Lys Ser Val Lys Gly Tyr
195 200

<210> 1141
<211> 182
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (123)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (126)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (128)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (137)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (143)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (157)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (163)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (165)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (176)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1141
His Glu Glu His Ser Ile Tyr Cys Thr Val Asn Asn Asp Glu Gly Glu
1 5 10 15

Trp Ser Gly Pro Pro Pro Glu Cys Arg Gly Lys Ser Leu Thr Ser Lys
20 25 30

Val Pro Pro Thr Val Gln Lys Pro Thr Thr Val Asn Val Pro Thr Thr
35 40 45

Glu Val Ser Pro Thr Ser Gln Lys Thr Thr Thr Lys Thr Thr Thr Pro
50 55 60

Asn Ala Gln Gly Thr Glu Thr Pro Ser Val Leu Gln Lys His Thr Thr
65 70 75 80

Glu Asn Val Ser Ala Thr Arg Thr Pro Pro Thr Pro Gln Lys Pro Thr
85 90 95

Thr Val Asn Val Pro Ala Thr Ile Val Thr Pro Thr Pro Gln Lys Pro
100 105 110

Thr Thr Leu Met Phe Gln Leu Gln Glu Ser Xaa Gln His Xaa Lys Xaa
115 120 125

His Leu Val Met Phe Gln Leu Gln Xaa Leu Pro Leu Phe Gly Xaa His
130 135 140

Arg Gly Asn Val Arg His His Ser Arg Ala Phe Gly Xaa Ser Phe Lys
145 150 155 160

Thr Phe Xaa Lys Xaa Phe Cys Val Arg Ser Cys Gly Met Phe Cys Xaa
165 170 175

Arg Pro Leu Arg Pro Gly
180

<210> 1142
<211> 143
<212> PRT
<213> Homo sapiens

<220>
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<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (141)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1142
Asp Gly Ala Xaa Pro Gly Arg Ala Tyr Ala Leu Leu Leu Leu Leu Ile
1 5 10 15

Cys Phe Asn Val Gly Ser Gly Leu His Leu Gln Val Leu Ser Thr Arg
20 25 30

Asn Glu Asn Lys Leu Leu Pro Lys His Pro His Leu Val Arg Gln Lys
35 40 45

Arg Ala Trp Ile Thr Ala Pro Val Ala Leu Arg Glu Gly Glu Asp Leu
50 55 60

Ser Lys Lys Asn Pro Ile Ala Lys Ile His Ser Asp Leu Ala Glu Glu
65 70 75 80

Arg Gly Leu Lys Ile Thr Tyr Lys Tyr Thr Gly Lys Gly Ile Thr Glu
85 90 95

Pro Pro Phe Gly Ile Phe Val Phe Asn Lys Asp Thr Gly Glu Leu Asn
100 105 110

Val Thr Ser Ile Leu Asp Arg Glu Glu Thr Pro Phe Phe Leu Leu Thr
115 120 125

Gly Leu Arg Phe Gly Cys Lys Arg Glu Gln Cys Arg Xaa Thr Leu
130 135 140

<210> 1143
<211> 111
<212> PRT
<213> Homo sapiens

<400> 1143
Ala Gln Ser Pro Ser Arg Ser Thr Gly Gln Asp Val Ala Ala Glu Trp
1 5 10 15

Gly Ser Glu Glu Ser Val Ala Gly Ser Leu Glu Ala Glu Phe Glu Lys
20 25 30

Ala Ala Glu Glu Val Arg His Leu Lys Thr Lys Pro Ser Asp Glu Glu
35 40 45

Met Leu Phe Ile Tyr Gly His Tyr Lys Gln Ala Thr Val Gly Asp Ile
50 55 60

Asn Thr Glu Arg Pro Gly Met Leu Asp Phe Thr Gly Lys Ala Lys Trp
65 70 75 80

Asp Ala Trp Asn Glu Leu Lys Gly Thr Ser Lys Glu Asp Ala Met Lys
85 90 95

Ala Tyr Ile Asn Lys Val Glu Glu Leu Lys Lys Lys Tyr Gly Ile
100 105 110

<210> 1144
<211> 74
<212> PRT
<213> Homo sapiens

<220>
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<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (72)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1144
Ala Cys Ala Tyr Thr Pro Pro Ser Xaa Lys Ala Val Gln Arg Ile Ala
1   5   10   15

Glu Ser His Xaa Gln Ser Xaa Ser Asn Leu Asn Glu Asn Xaa Ala Ser
            20   25   30

Glu Glu Glu Xaa Glu Xaa Gly Glu Leu Arg Glu Leu Gly Tyr Pro Arg
        35   40   45

Glu Glu Asp Glu Glu Glu Glu Glu Xaa Asp Glu Glu Glu Glu Asp Xaa
    50   55   60

Glu Asp Ser Xaa Ala Glu Asp Xaa Ser Gly
65   70

<210> 1145
<211> 153
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (18)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (30)
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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (70)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (110)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (143)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1145
Asn Xaa Pro Asn Ala Glu Leu Gly Gly Pro Phe Asn Gln Met Asn Gly
1 5 10 15

Val Xaa Gly Asn Gly Met Asn Asn Ile Asp Met Thr Gly Xaa Lys Lys
20 25 30

Ser Leu Xaa Leu Pro Tyr Pro Ser Ser Phe Ala Pro Val Ser Xaa Pro
35 40 45

Arg Asn Gln Thr Phe Thr Tyr Met Gly Lys Xaa Ser Ile Asp Pro Gln
50 55 60

Tyr Pro Gly Ala Ser Xaa Tyr Pro Glu Gly Ile Ile Asn Ile Val Ser
65 70 75 80

Ala Gly Ile Leu Gln Gly Val Thr Ser Pro Ala Ser Thr Thr Ala Ser
85 90 95

Ser Ser Val Thr Ser Ala Ser Pro Asn Pro Leu Ala Thr Xaa Pro Leu
100 105 110

Gly Val Cys Thr Met Ser Gln Thr Gln Pro Asp Leu Asp His Leu Tyr
115 120 125

Ser Pro Pro Xaa Pro Pro Pro Pro Tyr Ser Gly Cys Ala Gly Xaa Leu
130 135 140

Tyr Gln Asp Pro Ser Ala Phe Leu Leu
145 150

<210> 1146
<211> 32
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1146
Xaa Phe Gln Ile Asp Pro Xaa Leu Gly Thr Val Gly Phe Gly Ser Gly
1 5 10 15

Leu His Gly Trp Ala Phe Thr Leu Lys Ala Val Cys Arg Glu Cys Met
20 25 30

<210> 1147
<211> 62
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1147
Ala Xaa His Gln Arg Xaa Xaa Xaa Ile Lys Arg Leu Ser Thr Glu His
1 5 10 15

Ser Ser Val Ser Glu Tyr His Pro Ala Asp Gly Tyr Ala Phe Ser Ser
20 25 30

Asn Ile Tyr Thr Arg Gly Ser His Leu Asp Gln Gly Glu Ala Ala Val
35 40 45

Ala Phe Lys Pro Thr Ser Asn Arg His Ile Arg Leu Lys Leu
50 55 60

<210> 1148
<211> 60
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (54)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1148
Gly Arg Ala Leu Arg Ala Xaa Arg Leu Thr Gln Leu Thr Glu Ile Leu
1 5 10 15

Ser Gly Gly Val Tyr Ile Glu Lys Asn Asp Lys Leu Cys His Met Asp
20 25 30

Thr Ile Asp Trp Arg Asp Ile Val Arg Asp Arg Asp Ala Glu Ile Val
35 40 45

Val Lys Asp Asn Gly Xaa Lys Leu Ser Pro Leu Ser
50 55 60

<210> 1149
<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (23)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1149
Phe Gln Thr Arg Asn Leu Gln Val Thr Leu Glu Asp Gly Tyr Ile Glu
1 5 10 15

Leu Ser Thr Ser Asp Arg Xaa Gly Pro Ile Phe Lys Ser Pro Gln Thr
20 25 30

Tyr Met Asp Gly Leu Leu His Tyr Val Ser Val Ile Ser Asp Asn Ser
35 40 45

Gly

<210> 1150
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (21)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (37)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1150
Pro Ala Ala Arg Xaa Xaa Val Pro Arg Ala Met Glu Arg Ala Ser Leu
1 5 10 15

Ile Gln Lys Ala Xaa Leu Ala Glu Gln Ala Glu Arg Tyr Glu Asp Met
20 25 30

Ala Ala Phe Met Xaa Gly Ala Val Glu Lys Gly Glu Glu Ser Pro Ala
35 40 45

Lys Ser Glu Thr Cys Ser Gln
50 55

<210> 1151
<211> 162

<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (3)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1151
Val Ser Xaa Gly Thr Gly Asn Ser Arg Val Arg Thr His Xaa Val Pro
1 5 10 15

Pro Arg Pro Leu Pro Cys Ser Glu Gly Gly Glu Arg Leu Leu Pro Thr
20 25 30

Gln Lys Gln Pro Gly Gly Gly Gln Val Asn Ser Ser Arg Tyr Lys Thr
35 40 45

Glu Leu Cys Arg Pro Phe Glu Glu Asn Gly Ala Cys Lys Tyr Gly Asp
50 55 60

Lys Cys Gln Phe Ala His Gly Ile His Glu Leu Arg Ser Leu Thr Arg
65 70 75 80

His Pro Lys Tyr Lys Thr Glu Leu Cys Arg Thr Phe His Thr Ile Gly
85 90 95

Phe Cys Pro Tyr Gly Pro Arg Cys His Phe Ile His Asn Ala Glu Glu
100 105 110

Arg Arg Ala Leu Ala Gly Ala Arg Asp Leu Ser Ala Asp Arg Pro Arg
115 120 125

Leu Gln His Ser Phe Ser Leu Leu Gly Phe Pro Val Pro Leu Pro Pro
130 135 140

Pro Leu Pro Pro Gly Cys Trp Thr Ala His Val His Gln Pro Asn Pro
145 150 155 160

Tyr Phe

<210> 1152
<211> 124

<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (15)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (114)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1152
His Glu Gly Ala Ser Arg Cys Gly His Leu Cys Arg Gly Arg Xaa Ala
1 5 10 15

Ala Ser Tyr Pro Ala Leu Arg Ala Ser Leu Leu Pro Gln Ser Leu Ala
20 25 30

Ala Ala Ala Ala Phe Pro Thr Arg Xaa Asn Ser Gln Glu Ser Lys Thr
35 40 45

Thr Tyr Leu Glu Asp Leu Pro Pro Pro Pro Glu Tyr Glu Leu Ala Pro
50 55 60

Ser Lys Leu Glu Glu Glu Val Asp Asp Val Phe Leu Ile Arg Ala Gln
65 70 75 80

Gly Leu Pro Trp Val Met Ala Leu Trp Glu Asp Val Ala Leu Thr Phe
85 90 95

Phe Phe Gln Thr Cys Arg Ile Arg Gln Arg Leu Ser Asn Gly Asn Tyr
100 105 110

Ile Xaa Leu Pro Lys Asn Lys Arg Trp Gly Lys Thr
115 120

<210> 1153
<211> 151
<212> PRT
<213> Homo sapiens

<220>

<221> SITE
<222> (105)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (140)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (147)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (149)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1153

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Ala Met Val Arg Leu Val Lys Cys Asp Val Tyr Pro Cys Pro Asn Thr
  1               5                  10                  15

Val Asp Cys Phe Val Ser Arg Pro Thr Glu Lys Thr Val Phe Thr Val
             20                  25                  30

Phe Met Leu Ala Ala Ser Gly Ile Cys Ile Ile Leu Asn Val Ala Glu
         35                  40                  45

Val Val Tyr Leu Ile Ile Arg Ala Cys Ala Arg Arg Ala Gln Arg Arg
     50                  55                  60

Ser Asn Pro Pro Ser Arg Lys Gly Ser Gly Phe Gly His Arg Leu Ser
 65                  70                  75                  80

Pro Glu Tyr Lys Gln Asn Glu Ile Asn Lys Leu Leu Ser Glu Gln Asp
                 85                  90                  95

Gly Ser Leu Lys Asp Ile Leu Arg Xaa Thr Leu Ala Arg Gly Leu Gly
            100                 105                 110

Trp Leu Lys Lys Thr Thr Val Leu Gly Cys Asp Ala Thr Tyr Gln Ala
        115                 120                 125

Thr Ser His Pro Thr Pro Thr Leu Pro Gly Arg Xaa Pro Pro Ser Pro
    130                 135                 140

Cys Arg Xaa Pro Xaa Ala His
145                 150
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<210> 1154
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (26)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (37)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (103)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (111)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1154
Gly Ser Pro Trp Pro Asn Ser Cys Arg Pro Glu Ala Arg Arg Asp Arg
1 5 10 15

Leu Gln Pro Leu Gly Gly Val Cys Glu Xaa Ala Ser Glu His Asp Val
20 25 30

Val Asn Leu Gly Xaa Gly Phe Pro Asp Phe Pro Pro Pro Asp Phe Ala
35 40 45

Val Glu Ala Phe Gln His Ala Val Ser Gly Asp Phe Met Leu Asn Gln
50 55 60

Tyr Thr Lys Thr Phe Gly Tyr Pro Pro Leu Asp Glu Asp Pro Gly Asn
65 70 75 80

Phe Phe Gly Gly Ala Ala Gly Ser Arg Ile Arg Pro Val Gln Gly Cys
85 90 95

Ala Gly Asp Cys Trp Trp Xaa Trp Gly Pro Val Ser Lys Ala Xaa Pro
100 105 110

Gly

<210> 1155
<211> 104
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (78)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (91)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1155
Gly Thr Thr Val Arg Asp Tyr Thr Gln Met Asn Glu Leu Gln Arg Arg
1   5   10   15

Leu Gly Pro Arg Gly Leu Val Val Leu Gly Phe Pro Cys Asn Gln Phe
            20   25   30

Gly His Gln Glu Asn Ala Lys Asn Glu Glu Ile Leu Asn Ser Leu Lys
        35   40   45

Tyr Val Arg Pro Gly Gly Gly Phe Glu Pro Asn Phe Met Leu Phe Glu
    50   55   60

Lys Cys Glu Val Asn Gly Ala Gly Ala His Pro Leu Phe Xaa Phe Leu
65   70   75   80

Arg Glu Ala Leu Pro Ala Pro Ser Asp Asp Xaa Thr Ala Leu Met Thr
                85   90   95

Asp Pro Lys Leu Ile Thr Trp Ser
            100

<210> 1156
<211> 38
<212> PRT
<213> Homo sapiens

<400> 1156
Ala Phe Ile Ala Lys Ser Phe Tyr Asp Leu Ser Ala Ile Ser Leu Asp
1   5   10   15

Gly Glu Lys Val Asp Phe Asn Thr Ser Arg Gly Arg Ala Val Leu Ile

20 25 30

Glu Asn Val Ala Ser Leu
35

<210> 1157
<211> 63
<212> PRT
<213> Homo sapiens

<400> 1157
Asp Thr Thr Thr Arg Asp Phe Thr Gln Leu Asn Glu Leu Gln Cys Arg
1 5 10 15

Phe Pro Arg Arg Leu Val Val Leu Gly Phe Pro Cys Asn Gln Phe Gly
20 25 30

His Gln Ser Arg Arg Asp Arg Ser Ser Lys Pro Ser Phe Glu Met Ser
35 40 45

Leu Gln Pro Gln Lys Tyr Leu Gln Pro His Thr Ile Ser Ser Ala
50 55 60

<210> 1158
<211> 67
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (50)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1158
Thr Leu Lys Phe Phe Pro Ala Ser Ala Asp Arg Thr Val Ile Asp Tyr
1 5 10 15

Asn Gly Glu Arg Thr Leu Asp Gly Phe Lys Lys Phe Leu Glu Ser Gly
20 25 30

Gly Gln Asp Gly Ala Gly Asp Asp Asp Asp Leu Glu Asp Leu Glu Glu
35 40 45

Ala Xaa Glu Pro Asp Met Glu Glu Asp Asp Asp Gln Lys Ala Val Lys
50 55 60

Asp Glu Leu

65

<210> 1159
<211> 214
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (202)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (207)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1159
Ala Val Ile Met Gly Ala Pro Gly Ser Gly Lys Gly Thr Val Ser Ser
1 5 10 15

Arg Ile Thr Thr His Phe Glu Leu Lys His Leu Ser Ser Gly Asp Leu
20 25 30

Leu Arg Asp Asn Met Leu Arg Gly Thr Glu Ile Gly Val Leu Ala Lys
35 40 45

Ala Phe Ile Asp Gln Gly Lys Leu Ile Pro Asp Asp Val Met Thr Arg
50 55 60

Leu Ala Leu His Glu Leu Lys Asn Leu Thr Gln Tyr Ser Trp Leu Leu
65 70 75 80

Asp Gly Phe Pro Arg Thr Leu Pro Gln Ala Glu Ala Leu Asp Arg Ala
85 90 95

Tyr Gln Ile Asp Thr Val Ile Asn Leu Asn Val Pro Phe Glu Val Ile
100 105 110

Lys Gln Arg Leu Thr Ala Arg Trp Ile His Pro Ala Ser Gly Arg Val
115 120 125

Tyr Asn Ile Glu Phe Asn Pro Pro Lys Thr Val Gly Ile Asp Asp Leu
130 135 140

Thr Gly Glu Pro Leu Ile Gln Arg Glu Asp Asp Lys Pro Glu Thr Val
145 150 155 160

Ile Lys Arg Leu Lys Ala Tyr Glu Asp Gln Thr Lys Pro Val Leu Glu

165 170 175

Tyr Tyr Gln Lys Lys Gly Val Leu Glu Thr Phe Ser Gly Thr Glu Thr
180 185 190

Asn Lys Ile Trp Pro Tyr Val Tyr Ala Xaa Leu Gln Leu Lys Xaa His
195 200 205

Lys Glu Ala Arg Lys Leu
210

<210> 1160
<211> 33
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1160
Leu Xaa Ser Xaa Lys Trp Ile Tyr Asn Gly Phe Ser Ser Val Leu Gln
1 5 10 15

Phe Leu Gly Leu Tyr Lys Lys Ser Gly Lys Leu Val Phe Phe Arg Leu
20 25 30

Gly

<210> 1161
<211> 123
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE
<222> (28)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (30)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (66)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (88)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (96)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1161
Gly Asn Ser Lys Thr Glu Asp Gln Arg Asn Glu Glu Lys Ala His Val
1 5 10 15

Xaa Ala Asn Lys Lys Ile Glu Lys Gln Leu Gln Xaa Asp Xaa Gln Val
20 25 30

Tyr Arg Ala Thr His Arg Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly
35 40 45

Lys Ser Thr Ile Val Lys Gln Met Arg Ile Leu His Val Asn Gly Phe
50 55 60

Asn Xaa Asp Ser Glu Lys Ala Thr Lys Val Gln Asp Ile Lys Asn Asn
65 70 75 80

Leu Lys Glu Ala Ile Glu Thr Xaa Val Ala Ala Met Ser Asn Leu Xaa
85 90 95

Ala Pro Arg Gly Ala Gly Gln Pro Arg Glu Thr Ser Ser Glu Trp Thr
100 105 110

Thr Ser Trp Ser Val Met Asn Val Pro Gly Phe
115 120

<210> 1162
<211> 87
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (61)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (70)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (80)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1162
Pro Thr Arg Pro Pro Thr Arg Pro Glu Leu Lys Asp Leu Gln Glu Pro
1 5 10 15

Gln Glu Pro Arg Val Gly Lys Leu Arg Asn Phe Ala Pro Ile Pro Gly
20 25 30

Glu Pro Val Val Pro Ile Leu Cys Ser Asn Pro Asn Phe Pro Glu Glu
35 40 45

Leu Lys Pro Leu Cys Lys Ser Pro Met Pro Arg Xaa Xaa Phe Arg Gly
50 55 60

Trp Arg Lys Ser Leu Xaa Asp Pro Gly His Met Trp Lys Ser Val Xaa
65 70 75 80

Thr Leu Ala Cys Thr Gly Cys
85

<210> 1163
<211> 100
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (67)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (68)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1163
Val Gln Gly Pro Tyr Val Leu Gly Thr Gly Leu Ile Leu Tyr Ala Leu
1 5 10 15

Ser Lys Glu Ile Tyr Val Ile Ser Ala Glu Thr Phe Thr Ala Leu Ser
20 25 30

Val Leu Gly Val Met Val Tyr Gly Ile Lys Lys Tyr Gly Pro Phe Val
35 40 45

Ala Asp Phe Ala Asp Lys Leu Asn Glu Gln Lys Leu Ala Gln Leu Glu
50 55 60

Glu Ala Xaa Xaa Ala Ser Ile Gln His Ile Gln Asn Ala Ile Asp Thr
65 70 75 80

Glu Lys Ser Gln Gln Ala Leu Val Gln Lys Arg His Tyr Leu Phe Gly
85 90 95

Cys Ala Lys Glu
100

<210> 1164
<211> 186
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (171)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (180)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1164
Trp Ile Pro Arg Ala Ala Gly Ile Arg His Glu Val Leu Cys Gly His

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 1               5                   10                  15
Leu Ala Lys Met Pro Glu Glu Thr Gln Thr Gln Asp Gln Pro Met Glu
            20                  25                  30
Glu Glu Glu Val Glu Thr Phe Ala Phe Gln Ala Glu Ile Ala Gln Leu
        35                  40                  45
Met Ser Leu Ile Ile Asn Thr Phe Tyr Ser Asn Lys Glu Ile Phe Leu
    50                  55                  60
Arg Glu Leu Ile Ser Asn Ser Ser Asp Ala Leu Asp Lys Ile Arg Tyr
65                  70                  75                  80
Glu Ser Leu Thr Asp Pro Ser Lys Leu Asp Ser Gly Lys Glu Leu His
                85                  90                  95
Ile Asn Leu Ile Pro Asn Lys Gln Asp Arg Thr Leu Thr Ile Val Asp
            100                 105                 110
Thr Gly Ile Gly Met Thr Lys Ala Asp Leu Ile Asn Asn Leu Gly Thr
        115                 120                 125
Ile Ala Lys Ser Gly Thr Lys Ala Phe Met Glu Ala Leu Gln Ala Gly
    130                 135                 140
Ala Asp Ile Ser Met Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser Ala
145                 150                 155                 160
Tyr Leu Val Ala Glu Lys Val Thr Val Ile Xaa Lys His Asn Asp Asp
                165                 170                 175
Glu Gln Tyr Xaa Trp Glu Ser Ser Ala Gly
            180                 185
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<210> 1165
<211> 199
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (54)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (173)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (191)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (196)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (197)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1165
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Ala Xaa Ile Cys Leu Leu Glu Thr Ala Pro Ser Ser Arg Glu Ser Gln
  1               5                  10                  15

Lys Glu Asp Met Ala Ala Gly Gln Arg Glu Ala Arg Pro Gln Val Ser
             20                  25                  30

Leu Thr Phe Glu Asp Val Ala Val Leu Phe Thr Trp Asp Glu Trp Arg
         35                  40                  45

Lys Leu Ala Pro Ser Xaa Arg Asn Leu Tyr Arg Asp Val Met Leu Glu
     50                  55                  60

Asn Tyr Arg Asn Leu Val Ser Leu Gly Leu Ser Phe Thr Lys Pro Lys
 65                  70                  75                  80

Val Ile Ser Leu Leu Gln Gln Gly Glu Asp Pro Trp Glu Val Glu Lys
                 85                  90                  95

Asp Ser Ser Gly Val Ser Ser Leu Gly Cys Lys Ser Thr Pro Lys Met
            100                 105                 110

Thr Lys Ser Thr Gln Thr Gln Asp Ser Phe Gln Glu Gln Ile Arg Lys
        115                 120                 125

Arg Leu Lys Arg Asp Glu Pro Trp Asn Phe Ile Ser Glu Arg Ser Cys
    130                 135                 140

Ile Tyr Glu Glu Lys Leu Lys Lys Gln Gln Asp Lys Asn Glu Asn Leu
145                 150                 155                 160
```

Gln Ile Ile Ser Val Ala His Thr Lys Ile Leu Thr Xaa Asp Arg Ser
165 170 175

His Lys Asn Val Glu Phe Ala Gln Asn Phe Tyr Leu Lys Ser Xaa Phe
180 185 190

Ile Lys His Xaa Xaa Ile Ala
195

<210> 1166
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (86)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1166
Trp Cys Cys Ser His Leu Trp Phe Gln Gly Arg Ala Thr Pro Glu Asn
1 5 10 15

Tyr Leu Phe Gln Gly Arg Gln Glu Cys Tyr Ala Phe Asn Gly Asn Ser
20 25 30

Gln Lys Asp Ile Leu Glu Glu Lys Ala Gly Ser Ala Gly Thr Gly Cys
35 40 45

Ala Asp Thr Thr Tyr Gly Ala Gly Arg Ala His Gly Pro Cys Ser Ala
50 55 60

Glu Phe Gln Pro Arg Val Glu Cys Phe Pro Pro Pro Ser Arg Gly Pro
65 70 75 80

Leu Ala Ala Thr Gln Xaa Ala Cys Leu Ala Lys
85 90

<210> 1167
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (82)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (94)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (111)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (113)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (114)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (117)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1167
Asn Val Pro Ala Tyr Lys Ser Ser Gly Gln Ile Met Ser Ser Leu Tyr
1 5 10 15

Tyr Ala Asn Ala Leu Phe Ser Lys Tyr Pro Ala Ser Ser Ser Val Phe
20 25 30

Ala Thr Gly Ala Phe Pro Glu Gln Thr Ser Cys Ala Phe Ala Ser Asn
35 40 45

Pro Gln Arg Pro Gly Tyr Gly Ala Gly Ser Gly Ala Ser Phe Ala Ala
50 55 60

Ser Met Gln Gly Leu Tyr Pro Gly Gly Gly Gly Met Ala Gly Gln Ser
65 70 75 80

Ala Xaa Gly Val Tyr Ala Ala Gly Tyr Gly Leu Glu Pro Xaa Ser Phe
85 90 95

Asn Met His Cys Ala Pro Phe Glu Gln Lys Pro Leu Arg Gly Xaa Pro
100 105 110

Xaa Xaa Ile Pro Xaa Arg
115

<210> 1168
<211> 77
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (18)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (23)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (48)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1168
Ser Arg Ser Trp Gly Phe Gly Cys Ser Met Leu Ala Leu Glu Thr Arg
1 5 10 15

Ala Xaa Pro Gly His Xaa Xaa Gly Cys Val Thr Phe Val Leu Asn Asp
20 25 30

His Ser Met Ala Phe Thr Gly Asp Ala Leu Leu Ile Arg Gly Cys Xaa
35 40 45

Arg Thr Asp Phe Gln Gln Gly Cys Cys Gln Asp Leu Val Thr Ile Arg
50 55 60

Ser Met Lys Arg Ser Phe Lys Ile Ser Arg Arg Leu Ser
65 70 75

<210> 1169
<211> 115
<212> PRT
<213> Homo sapiens

<400> 1169
Gly Pro Arg His Ala Asp Phe Pro Cys Ser Ala Val Val Arg Lys Cys
1 5 10 15

Leu Ala Ala Pro Gly Arg Arg Arg Gly Arg Gln Thr Tyr Ser Arg Phe
20 25 30

Gln Thr Leu Glu Leu Glu Lys Glu Phe Leu Phe Asn Pro Tyr Leu Thr
35 40 45

Arg Lys Arg Arg Ile Glu Val Ser His Ala Leu Ala Leu Thr Glu Arg
50 55 60

Gln Val Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys Glu
65 70 75 80

Asn Asn Lys Asp Lys Phe Pro Val Ser Arg Gln Glu Val Lys Asp Gly
85 90 95

Glu Thr Lys Lys Glu Ala Gln Glu Leu Glu Glu Asp Arg Ala Glu Gly
100 105 110

Leu Thr Asn
115

<210> 1170
<211> 55
<212> PRT
<213> Homo sapiens

<400> 1170
Tyr Leu Lys Arg Leu Ala Thr Met Ser Lys Pro Glu Leu Lys Glu Asp
1 5 10 15

Lys Met Leu Glu Val His Phe Val Gly Asp Asp Asp Val Leu Asn His
20 25 30

Ile Leu Asp Arg Glu Gly Gly Ala Lys Leu Lys Lys Glu Arg Ala His
35 40 45

Phe Trp Ser Thr Pro Lys Lys
50 55

<210> 1171
<211> 130
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (23)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (26)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (34)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (37)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (39)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (45)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (87)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (108)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (128)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (129)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1171

```
Pro Thr Arg Pro Xaa Thr Xaa Pro Phe Gly Pro Arg Trp His Gly Met
  1               5                  10                  15

Arg Lys Ala Leu Pro Trp Xaa Leu Val Xaa Leu Ala Ser Leu Arg Ala
             20                  25                  30

Val Xaa Thr Ser Xaa Met Xaa Thr Leu Pro Lys Arg Xaa Lys Ile Val
         35                  40                  45

Glu Val Gly Pro Arg Asp Gly Leu Gln Asn Glu Lys Asn Ile Val Ser
     50                  55                  60

Thr Pro Val Lys Ile Lys Leu Ile Asp Met Leu Ser Glu Ala Gly Leu
 65                  70                  75                  80

Ser Val Ile Glu Thr Thr Xaa Phe Glu Ser Pro Lys Trp Val Pro Gln
                 85                  90                  95

Met Gly Asp His Thr Glu Val Leu Lys Gly Ile Xaa Lys Phe Pro Gly
            100                 105                 110

Ile Asn Tyr Pro Val Leu Thr Pro Asn Leu Lys Gly Phe Glu Ala Xaa
        115                 120                 125

Xaa Pro
    130
```

<210> 1172
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (13)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE
<222> (28)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (46)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (51)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (101)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (103)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1172
Ala Arg Glu Asp Leu Asp Lys Ala Leu Leu Lys Ala Xaa Gln Asp Met
1 5 10 15

Phe Asp Lys Lys Thr Lys Ala Ser Leu Tyr Leu Xaa Thr His Asn Gly
20 25 30

Asn Met Tyr Thr Ser Ser Leu Tyr Gly Cys Leu Ala Ser Xaa Leu Ser
35 40 45

His His Xaa Ala Gln Glu Leu Ala Gly Ser Arg Ile Gly Ala Phe Ser
50 55 60

Tyr Gly Ser Gly Leu Ala Ala Ser Phe Phe Ser Phe Arg Val Ser Arg
65 70 75 80

Leu Lys Val Phe Cys Arg Ser Met Glu Ser Phe Trp Glu Thr Tyr Ala
85 90 95

Ser Arg Ala Ser Xaa Arg Xaa Ser Tyr Phe
100 105

<210> 1173
<211> 28
<212> PRT

<213> Homo sapiens

<400> 1173
Pro Cys Lys Gly Ser Ile Ile Thr Cys Ser Leu Asn Arg Asp Leu Tyr
1 5 10 15

Glu Trp Leu His Glu Gly Ser Ala Val Ser Tyr Phe
20 25

<210> 1174
<211> 23
<212> PRT
<213> Homo sapiens

<400> 1174
Ile Ile Thr Cys Ser Leu Ile Arg Asp Leu Tyr Glu Trp Leu His Glu
1 5 10 15

Gly Ser Ala Val Ser Tyr Phe
20

<210> 1175
<211> 45
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1175
Ala Ala Ser Ser Ile Cys Leu Xaa Gln Arg Leu Ser His Ala Cys Leu
1 5 10 15

Ser Thr His Gly Arg Tyr Ser Glu Thr Ala Asn Gly Ser Leu Asn Gln
20 25 30

Leu Trp Phe Leu Trp Ser Leu Ala Pro Leu Leu Leu Gly
35 40 45

<210> 1176
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (24)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (35)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (36)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (45)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (66)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1176
```
Arg Pro Glu Asp Ser Leu Phe Cys Pro Lys Met Glu Asn Ser Thr Thr
  1               5                  10                  15

Thr Ile Ser Arg Glu Glu Leu Xaa Glu Leu Gln Glu Ala Phe Asn Lys
             20                  25                  30

Ile Asp Xaa Xaa Asn Ser Gly Tyr Val Ser Asp Tyr Xaa Leu Gln Asp
         35                  40                  45

Leu Phe Lys Glu Ala Ser Leu Pro Leu Pro Gly Tyr Lys Val Arg Glu
     50                  55                  60

Ile Xaa Glu Lys Ile Leu Ser Val Ala Asp Ser Asn Lys Asp Gly Lys
 65                  70                  75                  80

Ile Asn Phe Glu Glu Phe
                 85
```

<210> 1177
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (157)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (158)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (163)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1177
```
Ile Thr Ile Ser Phe Phe Leu Cys Leu Arg Pro Pro Thr Phe Phe Ser
 1               5                  10                  15

Phe Pro Phe Ser Leu Trp Gly Pro Ser Pro Met Leu Pro Cys Pro Ile
            20                  25                  30

Pro Phe Ser Pro Ser Arg Leu Leu Ile Pro Pro Phe Pro Ser Phe Pro
        35                  40                  45

Ser Asn Tyr Gln Leu Trp Leu Gly Arg His Asn Leu Phe Asp Asp Glu
    50                  55                  60

Asn Thr Ala Gln Phe Val His Val Ser Glu Ser Phe Pro His Pro Gly
65                  70                  75                  80

Phe Asn Met Ser Leu Leu Glu Asn His Thr Arg Gln Ala Asp Glu Asp
                85                  90                  95

Tyr Ser His Asp Leu Met Leu Leu Arg Leu Thr Glu Pro Ala Asp Thr
            100                 105                 110

Ile Thr Asp Ala Val Lys Val Gly Lys Leu Pro Thr Gln Glu Pro Glu
        115                 120                 125

Val Gly Glu His Leu Val Gly Phe Arg Leu Gly Gln Ala Leu Asn Gln
    130                 135                 140

Lys Asn Phe Leu Ile Ser Glu Asp Leu Gln Met Val Xaa Xaa Leu Gln
145                 150                 155                 160

Lys Ser Xaa Leu Lys Glu
                165
```

<210> 1178
<211> 79
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1178
```
Cys Xaa Ala Ala Gly Pro Ser Cys Ala Leu Lys Ala Gly Lys Thr Ala
  1               5                  10                  15

Ser Gly Ala Gly Glu Val Val Arg Cys Leu Ser Glu Gln Ser Val Gly
             20                  25                  30

His Leu Ala Leu Arg Arg Gly Pro Gly Ala Arg Leu Pro Ala Leu Leu
         35                  40                  45

Asp Glu Gln Gln Val Asn Val Leu Leu Tyr Asp Met Asn Gly Cys Tyr
     50                  55                  60

Ser Arg Leu Lys Glu Leu Val Pro Thr Leu Pro Gln Asn Arg Lys
 65                  70                  75
```

<210> 1179
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (19)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (29)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (47)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (50)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1179
```
Ala Xaa Val Gln Leu Thr Leu Xaa Xaa Thr Gln Cys Pro Xaa Gly Lys
  1               5                  10                  15

Ser Val Xaa Cys His Val Lys Ala Leu His Asp Ser Xaa Pro Gly Cys
             20                  25                  30

Asn Cys Ala Pro Ala Gln Phe Pro Xaa Leu Pro His Ala Ala Xaa Pro
         35                  40                  45

Asp Xaa Gly
     50
```

<210> 1180
<211> 96
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (42)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (50)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (75)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (81)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (89)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (95)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1180
```
Ile Ser Arg Thr Pro Glu Gly His Val Arg Gly Gly Gly Arg Glu Ala
  1               5                  10                  15

Arg Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
             20                  25                  30

Val His Asn Ala Lys Thr Lys Pro Arg Xaa Glu Gln Phe Asn Ser Thr
         35                  40                  45

Tyr Xaa Trp Phe Ser Val Leu His Arg Pro Ala Pro Gly Trp Leu Glu
     50                  55                  60

Arg Gln Gly Ser Tyr Lys Trp Gln Gly Phe Xaa Thr Lys Gly Phe Pro
 65                  70                  75                  80

Xaa Phe Leu Gly Glu Asn Leu Phe Xaa Lys Ala Lys Gly Gln Xaa Arg
                 85                  90                  95
```

<210> 1181
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (34)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (46)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1181
```
Gly Gly Tyr Cys Ser Gly Gly Ser Cys Ser Asn Phe Tyr Phe Tyr His
  1               5                  10                  15

Met Asp Val Trp Gly Glu Arg Thr Thr Val Thr Val Ser Ser Ala Ser
             20                  25                  30

Thr Xaa Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Xaa Asn Thr
         35                  40                  45

Ser Glu Asn Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro
     50                  55                  60

Glu Thr Gly Asp Gly Val Leu Glu Leu Arg Gly Leu
 65                  70                  75
```

<210> 1182
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (79)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (90)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (112)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (125)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (132)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (136)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1182
```
Asp Pro Tyr Gly Thr Met Glu Ala Pro Ala Gln Leu Leu Xaa Leu Leu
  1               5                  10                  15

Leu Leu Trp Leu Pro Xaa Thr Thr Gly Glu Ile Leu Met Thr Gln Ser
             20                  25                  30

Pro Ala Thr Leu Ser Val Ser Pro Gly Glu Arg Val Thr Leu Ser Cys
         35                  40                  45

Arg Ala Gly Gln Ser Val Tyr Ser Asn Leu Ala Trp Tyr Gln Gln Lys
     50                  55                  60

Pro Gly Gln Ala Pro Arg Leu Leu Met Tyr Gly Ser Ser Thr Xaa Ala
 65                  70                  75                  80

Thr Asp Val Pro Val Arg Phe Ser Gly Xaa Gly Ser Gly Thr Glu Phe
                 85                  90                  95

Thr Leu Thr Ile Ser Ser Leu Gln Ser Asp Asp Ser Ala Val Tyr Xaa
            100                 105                 110

Cys Gln Gln Tyr Ile Met Trp Pro Gly Thr Phe Gly Xaa Gly Thr Lys
        115                 120                 125
```

Gly Glu Ile Xaa Arg Thr Gly Xaa Ala
130 135

<210> 1183
<211> 93
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (3)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1183
Val Arg Xaa Xaa Xaa Phe Gly Ser Thr Ala Pro Ser Ala Asp Ala Trp
1 5 10 15

Val Arg Thr Arg Gly Arg Thr Arg Gly Ala Glu Ala Ala Lys Met Leu
20 25 30

Gly Glu Ala Leu Ser Lys Asn Pro Gly Tyr Ile Lys Leu Arg Lys Ile
35 40 45

Arg Ala Ala Gln Asn Ile Ser Lys Thr Ile Ala Thr Ser Gln Asn Arg
50 55 60

Ile Tyr Leu Thr Ala Asp Asn Leu Val Leu Asn Leu Gln Asp Glu Ser
65 70 75 80

Phe Thr Arg Gly Ser Asp Ser Leu Ile Lys Gly Lys Lys
85 90

<210> 1184
<211> 46
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (32)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (34)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (40)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (46)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1184
Ile Asp Leu Met Cys Lys Lys Met Lys His Leu Trp Phe Phe Leu Leu
1 5 10 15

Leu Val Ala Val Ser Xaa Met Arg Pro Val Pro Gly Ala Ala Ala Xaa
20 25 30

Val Xaa Ala Arg Thr Gly Glu Xaa Phe Gly Asp Pro Val Xaa
35 40 45

<210> 1185
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (69)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (119)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (138)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (141)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (142)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1185
Ser Ala Leu Asn Thr Glu Leu Thr Met Glu Phe Gly Leu Ser Trp Val
1 5 10 15

Phe Leu Val Val Ile Leu Lys Gly Val Gln Cys Glu Val Gln Leu Val
20 25 30

Glu Ser Gly Gly Ala Val Val Gln Pro Gly Gly Ser Leu Arg Leu Ser
35 40 45

Cys Glu Ala Ser Gly Phe Thr Phe Asp Asn Tyr Ala Met His Trp Val
50 55 60

Arg Gln Ala Pro Xaa Lys Gly Leu Glu Trp Val Cys Leu Ile Ser Arg
65 70 75 80

Asp Gly Arg Lys Thr Tyr Phe Ala Asp Ser Met Lys Gly Arg Phe Thr
85 90 95

Ile Ser Arg Asp Asn Ser Lys Asn Cys Leu Tyr Leu Gln Val Asn Ser
100 105 110

Leu Arg Val Glu Asp Thr Xaa Leu Tyr Tyr Cys Ala Lys Asp Ile Pro
115 120 125

Gly Ser Ser Val Trp Thr Ser Gly Val Xaa Gly His Xaa Xaa
130 135 140

<210> 1186
<211> 68
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (61)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (62)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1186
Ser Trp Thr Pro Arg Pro Phe His Leu Val Ile Ser Thr Glu His Arg
1 5 10 15

Gly Leu Thr Met Glu Leu Gly Leu Ser Trp Val Phe Leu Val Ala Ile
20 25 30

Leu Glu Gly Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly
35 40 45

Leu Val Gln Ala Gly Gly Val Pro Glu Thr Leu Leu Xaa Xaa Leu Trp
50 55 60

Leu Pro Pro Leu
65

<210> 1187
<211> 191
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (121)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (157)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (171)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (176)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (180)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (182)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (191)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1187
```
Gly Arg Glu Ile Xaa Arg Ser Phe His Leu Val Ile Ser Thr Glu His
  1               5                  10                  15

Arg Pro Pro Thr Met Glu Phe Gly Pro Ser Trp Val Phe Leu Val Ala
             20                  25                  30

Ile Leu Lys Gly Val His Cys Glu Val Gln Leu Val Glu Ser Gly Gly
         35                  40                  45

Gly Leu Val Gln Pro Gly Arg Ser Leu Arg Leu Ser Cys Thr Thr Ser
     50                  55                  60

Gly Phe Thr Phe Gly Asp Tyr Ser Met Ser Trp Val Arg Gln Ala Pro
 65                  70                  75                  80

Gly Lys Gly Leu Glu Trp Val Gly Phe Ile Arg Ser Lys Ala His Gly
                 85                  90                  95

Gly Thr Thr Glu Tyr Ala Ala Ser Val Lys Arg Gln Ile His His Leu
            100                 105                 110

Lys Glu Met Ile Pro Gln Ala Ser Xaa Ile Trp Gln Met Asn Ser Leu
        115                 120                 125

Lys Pro Arg Thr Gln Thr Leu Leu Leu Ser Arg His Asp Tyr Arg His
    130                 135                 140
```

Thr Pro Gly Tyr Trp Gly Gln Gly Thr Leu Val Thr Xaa Phe Ser Gly
145 150 155 160

Phe His Gln Gly Pro Ser Ser Ser Pro Trp Xaa Pro Cys Ser Arg Xaa
165 170 175

Thr Ser Glu Xaa Gln Xaa Pro Gly Leu Ala Gly Gln Gly Leu Xaa
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<210> 1188
<211> 121
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Pro Gly Gly Ser Leu Xaa Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
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Ser Ser Xaa Asp Met His Trp Val Arg Gln Val Ala Gly Lys Xaa Leu
35 40 45

Glu Trp Val Ser Xaa Ile Asp Pro Ala Gly Asn Thr Asn Tyr Pro Xaa
50 55 60

Ser Val Xaa Gly Arg Phe Ile Ile Ser Arg Glu Asn Asp Lys Ser Ser
65 70 75 80

Ser Tyr Leu Gln Asn Glu Trp Ala Asp Xaa Arg Gly Lys Xaa Cys Val
85 90 95

Ile Leu Xaa Lys Xaa Lys Leu Xaa Phe Leu Val Xaa Gly Xaa Xaa Arg
100 105 110

Ser Leu Gly Ala Xaa Gly Xaa Leu Gly
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<210> 1189
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Gln Asp Arg Val Thr Ile Thr Arg Asp Thr Ser Thr Asn Thr Ala Tyr
20 25 30

Met Asp Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
35 40 45

Xaa Arg Gly Phe Phe Gly Asp Arg Asp Tyr Tyr Tyr Tyr Tyr Tyr Met
50 55 60

Asp Val Trp Gly Lys Gly Thr Thr Val Thr Val Ser Ser Ala Ser Pro
65 70 75 80

Thr Ser Pro Lys Val Phe Pro Leu Ser Leu Cys Ser Thr Gln Pro Asp
85 90 95

Gly Asn Val Val Ile Ala Cys Xaa Val Gln Gly Phe Phe Pro Gln Glu
100 105 110

Pro Leu Gln Cys Gly Pro Gly Ala Lys Gly Xaa Arg Ala
115 120 125

<210> 1190
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Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Leu Pro Ala Glu
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Met Asp Glu Ala Asp Tyr Tyr Cys Gln Ala Trp Asp Ser Ser Ala Val
20 25 30

Val Phe Gly Gly Gly Thr Arg Leu Thr Xaa Leu Xaa Gln Pro Lys Ala
35 40 45

Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Xaa Glu Leu Gln Ala
50 55 60

Asn Lys Ala Thr Leu Val Cys Leu Ile Asn Asp Phe Tyr Pro Gly Ser
65 70 75 80

Arg Asp Ser Gly Leu Glu Xaa Gln Ile Xaa Thr Pro Phe Xaa Ala Glu
85 90 95

Leu Gly Xaa Thr Thr Thr
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Arg Pro Thr Arg Pro Gln Leu Trp Ala Gln Glu Ala Ala Leu Arg Thr
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Ile Ser Ser Met Ala Trp Ser Pro Leu Leu Leu Thr Leu Leu Ala His
20 25 30

Cys Thr Gly Ser Trp Ala Gln Ser Val Leu Thr Gln Pro Pro Ser Val
35 40 45

Ser Gly Ala Pro Gly Gln Arg Val Thr Ile Ser Cys Thr Gly Ser Ser
50 55 60

Ser Asn Ile Gly Ala Gly Tyr Asp Val His Trp Tyr Gln Gln Leu Pro
65 70 75 80

Gly Thr Ala Pro Lys Val Leu Ile Tyr Gly Asn Ser Asn Arg Pro Ser
85 90 95

Gly Val Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly Thr Ser Ala Ser
100 105 110

Leu Ala Ile Thr Gly Leu Gln Ala Glu Asp Xaa Val Asp Tyr Tyr Cys
115 120 125

Gln Ser Tyr Asp Ser Ser Leu Gly Gly Ser Val Phe Gly Gly Arg Thr
130 135 140

Lys Leu Xaa Val Leu Xaa Gln Pro Lys Xaa Ala Pro Ser Val Thr Leu
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<210> 1193
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Thr Gly Phe Arg Thr Ile Xaa Thr Met Ala Gly Phe Pro Leu Leu Leu
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Thr Leu Leu Thr His Cys Ala Xaa Ser Trp Ala Xaa Xaa Val Leu Thr
            20   25   30

Xaa Pro Pro Ser Xaa Ser Gly Thr Pro Gly Gln Arg Val Thr Ile Ser
        35   40   45

Cys Ser Gly Ser Ser Ser Asn Ile Gly Thr Asn Tyr Val Tyr Trp Tyr
    50   55   60

Gln Gln Leu Pro Gly Thr Ala Pro Glu Val Leu Ile Tyr Lys Asn Asp
65   70   75   80

Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly
                85   90   95

Thr Ser Ala Ser Leu Ala Ile Gly Gly Leu Arg Ser Glu Asp Glu Ala
            100   105   110

Asp Tyr Tyr Cys Ala Ser Trp Asp Asp Ser Leu Ser Gly Pro Val Phe
        115   120   125

Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro
130 135 140

Ser Xaa Thr Leu Xaa Pro Xaa Xaa Xaa
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<210> 1194
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<212> PRT
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<400> 1194
Gly Gly Arg Ala Leu Gly Ile Ser Pro Trp Pro Gly Pro Leu Ser Cys
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Ser Pro Ser Ser Leu Ser Ala Gln Arg Lys Arg Gly Gln Ala Pro Val
20 25 30

Val Val Ile Tyr Glu Asp Asn Lys Arg Pro Ser Gly Ile Pro Glu Arg
35 40 45

Phe Ser Gly Ser Thr Ser Gly Thr Leu Ala Thr Val Ile Ile Ser Gly
50 55 60

Ala Gln Val Asp Asp Asp Thr Asp Phe Tyr Cys Gln Ser Thr His Ser
65 70 75 80

Ser Asn Asn Gly Arg Ser Val Cys Leu Arg Asn Trp Asp Gln Gly His
85 90 95

Arg Pro Trp Ser Ala Gln Gly Gln Pro Gln Cys Xaa Ser Val Pro Gly
100 105 110

Leu Leu

<210> 1195
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Gln Asn Ser Xaa Cys Leu Thr Met Ala Trp Ile Pro Leu Leu Leu Pro
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Leu Leu Thr Leu Cys Thr Asp Ser Glu Ala Ser His Glu Leu Arg Gln
            20   25   30

Pro Xaa Ser Val Ser Val Ser Pro Xaa Gln Thr Ala Xaa Ile Thr Xaa
        35   40   45

Ser Gly Asp Ala Leu Pro Glu Gln Ser Ile Phe Trp Tyr Gln Gln Lys
    50   55   60

Pro Gly Gln Ala Pro Val Leu Val Ile Tyr Lys Val His Glu Arg Pro
65   70   75   80

Ser Asp Ala Leu Asn Asp Ser Leu Ala Pro Gly His Arg Gln Gln Ser
                85   90   95

Arg

<210> 1196
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<212> PRT
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<400> 1196
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Ala Ala Leu Glu Xaa Leu Asp Pro Pro Gly Cys Pro Gly Ser Ala Xaa
            20                  25                  30

Xaa Asp Asn Xaa Gly Xaa Val Gly Ser Gly Pro Pro Asn Pro Asp Leu
        35                  40                  45

Ser Xaa Thr Xaa Leu Asp Gln Tyr Xaa Ala Met Xaa Xaa Xaa Xaa His
    50                  55                  60

Gly Xaa Asn Met Glu Xaa Ala Leu Gly Met Leu Phe Trp His Xaa Xaa
65                  70                  75                  80

Asn Ile Gln Xaa Ser Xaa Ala Asp Leu Pro Asn Xaa Thr Pro Phe Pro
                85                  90                  95

Asp Lys Trp Thr Val Glu Asp Lys Xaa Leu Phe Xaa Gln Ala Phe Thr
            100                 105                 110

Phe His Gly Lys Thr Phe His Thr Ile Gln Pro Met Xaa Pro His Lys
        115                 120                 125

Ser Ile Xaa Xaa Leu Val Lys Xaa Tyr Tyr Ser Trp Lys Lys Asp Glu
    130                 135                 140

Asp Xaa Asn Tyr Cys Asp Gly Ser Pro Cys Pro Gly Asn Xaa Thr Gly
145                 150                 155                 160
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Arg Glu Glu Xaa Xaa Asp Glu Leu Glu Gln Ala Asn Gly Thr Ile Pro
165 170 175

Xaa Xaa Leu Lys Leu Asp Pro Asn Gln Glu Xaa Gln Arg Glu Val Pro
180 185 190

<210> 1197
<211> 43
<212> PRT
<213> Homo sapiens

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Glu Gln Asn Leu Asp Arg Gln Val Leu Xaa Thr Gln Cys Ile Arg Leu
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Glu Ala Arg Tyr Tyr Ser Leu Ser Leu Thr Xaa Xaa Xaa Leu Ser His

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Ile Val Ala Glu Leu Arg Asn Xaa Lys Xaa Lys
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<210> 1198
<211> 98
<212> PRT
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<400> 1198
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Phe Met Lys Ala Ile Gly Leu Pro Glu Glu Leu Ile Gln Lys Gly Lys
20 25 30

Asp Ile Lys Gly Val Ser Glu Ile Val Gln Asn Gly Lys His Phe Lys
35 40 45

Phe Thr Ile Thr Ala Gly Ser Lys Val Ile Gln Asn Glu Phe Thr Val
50 55 60

Gly Glu Glu Cys Glu Leu Glu Thr Met Thr Gly Glu Lys Val Lys Thr
65 70 75 80

Val Val Gln Leu Glu Gly Asp Xaa Lys Leu Val Thr Thr Phe Lys Asn
85 90 95

Ile Lys

<210> 1199
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<400> 1199

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Lys Lys Lys Lys Lys Lys Lys Lys Lys Xaa Gly Gly Arg Phe Xaa Gly
             20                  25                  30

Ser Lys Xaa Thr Xaa Xaa Cys Xaa Xaa Arg Xaa Xaa Xaa Xaa Ile Gly
         35                  40                  45

Ser Pro Lys Xaa Asn Xaa Leu Ala Val Val Leu Gln Arg Arg Asp Trp
     50                  55                  60

Xaa Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Xaa Xaa Pro Xaa
 65                  70                  75                  80

Phe Ala Xaa Trp Arg Asn Xaa Xaa Lys Ala Arg Thr Asp Arg Xaa Ser
                 85                  90                  95

Xaa Gln Leu Xaa Ser Leu Asn Gly Lys Trp Asp Xaa Pro Cys Ser Gly
            100                 105                 110

Ala Leu Ser Xaa Ala Gly Val Gly Val Thr Xaa Ser Val Thr Val Thr
        115                 120                 125

Xaa Ala Xaa Ala Xaa Ala Pro Xaa Pro Phe Xaa Phe Phe Pro Ser Phe
    130                 135                 140

Phe Ala Thr Phe Ala Gly Phe Pro Arg Lys Ala Leu Asn Gly Gly Leu
145                 150                 155                 160

Pro Xaa Gly Phe Arg Phe Arg Ala Leu Arg Asp Leu Asp Pro Lys Lys
                165                 170                 175

Leu Xaa Leu Gly Gly Trp Phe Thr
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<210> 1200
<211> 83
<212> PRT
<213> Homo sapiens

<400> 1200
Gly Pro Glu Met Gln Val Lys Leu Leu Gln Ser Leu Gly Leu Lys Ser
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Thr Leu Ile Thr Asp Gly Ser Thr Pro Ile Asn Leu Phe Asn Thr Ala
20 25 30

Phe Gly Leu Leu Gly Met Gly Pro Glu Gly Pro Ala Pro Gly Gln Lys
35 40 45

Gly Trp His Trp Ala Gln Pro Trp Lys Gly Asp Ile Pro Pro Val Leu
50 55 60

Leu Lys Pro Leu Lys Leu Leu Glu Asn Thr Thr Leu Cys Leu Phe Cys
65 70 75 80

Ala Tyr Ser

<210> 1201
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<212> PRT
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Leu Leu Phe Leu Gly Pro Val Gly Leu Ile Met Tyr Leu Gly Gly Val
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Phe Phe Ile Asn Arg Gln Arg Ser Ser Thr Ala Met Thr Val Met Ala
20 25 30

Asp Leu Gly Glu Arg Met Val Arg Glu Asn Leu Lys Val Trp Ile Tyr
35 40 45

Pro Glu Gly Thr Arg Asn Asp Asn Gly Asp Leu Leu Pro Phe Lys Lys
50 55 60

Gly Ala Phe Tyr Leu Ala Val Gln Ala Xaa Val
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<210> 1202
<211> 179

<212> PRT
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1   5   10   15

Ser Pro Phe Pro Gly Ser Val Gln Asp Pro Gly Leu His Val Trp Arg
            20   25   30

Val Glu Lys Leu Lys Pro Val Pro Val Ala Gln Xaa Asn Gln Gly Ile
        35   40   45

Phe Phe Ser Gly Asp Ser Tyr Leu Val Leu His Asn Gly Pro Glu Glu
    50   55   60

Val Ser His Leu His Leu Asn Thr Leu Leu Gly Glu Arg Pro Val Gln
65   70   75   80

His Arg Glu Val Arg Gly Asn Glu Ser Asp Leu Phe Met Ser Tyr Phe
                85   90   95

Pro Arg Gly Phe Lys Tyr Gln Glu Gly Gly Leu Xaa Ser Ala Phe His
            100   105   110

Lys Thr Ser Thr Gly Ala Pro Val Ala Ile Lys Lys Xaa Tyr Gln Val
        115   120   125

Lys Gly Xaa Xaa Lys Ser Val Gln Arg Xaa Gly Met Asn Trp Glu Xaa
    130   135   140

Xaa Asn Xaa Gly Cys Leu Pro Gly Xaa Gly Lys Asn Xaa Xaa Gly Leu
145   150   155   160

Xaa Asn Gln Ile Trp Xaa Lys Arg Gly Asp Cys Leu Asp Arg Asp Xaa
                165   170   175

Gln Gly Ser

<210> 1203
<211> 145
<212> PRT
<213> Homo sapiens

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 1   5   10   15

Gly Ala Ile Cys Leu Val Asn Ser Asp Asn Glu Arg Asp Ser Gly Met
            20   25   30

Leu Thr Ser Tyr Ala Thr Pro Glu Arg Ser Ala Ser Pro Asn Phe Leu
        35   40   45

Glu Gly Gln Val Ala Phe Ser His Pro Arg Leu Ser Asn Asn Arg Ser
    50   55   60

Val Met Pro Leu Asp Val Arg Gly Cys Thr Arg Ala Thr Leu Thr Gly
65   70   75   80

Ser Ala Cys Ala Tyr Pro Thr Pro Ala Gly Ala Gly Asn Pro Leu Asn
                85   90   95

Pro Ile Arg Asp Gly Asp Arg Gly Leu Gln Leu Phe Pro Met Asn Glu
            100   105   110

Glu Phe Pro Val Ser Ala Gly His Lys Leu Ala Leu Ile Lys Ser Leu
115 120 125

Pro Leu Gln Pro Phe Trp Xaa Phe Gly Pro Leu Xaa Leu Phe His Leu
130 135 140

Ser
145

<210> 1204
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<400> 1204
Pro Arg Pro Ala Gly Asn Ser Ser Arg Val His Xaa Glu Gly Thr Thr
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Val Leu Xaa Xaa Gln Phe Gly Leu Asn Ala Ser Xaa Ser Arg Phe Phe
20 25 30

Leu Gln Xaa Xaa Gln Leu Ile Thr Ile Leu Pro Val Arg Gln Arg Xaa
35 40 45

Leu Pro Leu Lys Xaa Ala Asn Xaa Xaa Leu Thr Xaa Pro Ala Ala Thr
50 55 60

Val Arg Gln Phe Leu Gln Val Pro
65 70

<210> 1205
<211> 159
<212> PRT
<213> Homo sapiens

<400> 1205
Thr Pro Leu Gly Val Pro Val Ile Gln Pro Tyr Arg Leu Asp Ser Lys
1 5 10 15

Val Lys Gln Ile Gly Gly Gly Ile Gln Ser Ile Thr Tyr Thr His Asn
20 25 30

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Gly Asp Ile Ser Arg Lys Pro Asn Thr Arg Lys Gln Lys Asn Gly Phe
        35                  40                  45

Pro Pro Asn Phe Ile His Ser Leu Asp Ser Ser His Met Met Leu Thr
    50                  55                  60

Ala Leu His Cys Tyr Arg Lys Gly Leu Thr Phe Val Ser Val His Asp
65                  70                  75                  80

Cys Tyr Trp Thr His Ala Ala Asp Val Ser Val Met Asn Gln Val Cys
                85                  90                  95

Arg Glu Gln Phe Val Arg Leu His Ser Glu Pro Ile Leu Gln Asp Leu
            100                 105                 110

Ser Arg Phe Leu Val Lys Arg Phe Cys Ser Glu Pro Gln Lys Ile Leu
        115                 120                 125

Glu Ala Ser Gln Leu Lys Glu Thr Leu Gln Ala Val Pro Lys Pro Gly
    130                 135                 140

Ala Phe Asp Leu Glu Gln Val Lys Arg Ser Thr Tyr Phe Phe Ser
145                 150                 155
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<210> 1206
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<213> Homo sapiens

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Gln Met Tyr Gly Thr Asn Lys Met Xaa Pro Tyr Arg Asp Ser Lys Leu
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Thr His Leu Phe Lys Asn Tyr Phe Asp Gly Glu Gly Lys Val Arg Met
20 25 30

Ile Val Tyr Val Asn Pro Lys Ala Xaa Asp Tyr Xaa Glu Asn Xaa Gln
35 40 45

Val Met Arg Phe Ala Glu Val Thr Gln Glu Val Glu Val Ala Arg Pro
50 55 60

Val Asp Lys Val Ile Cys Gly Leu Thr Pro Xaa Arg Arg Tyr Arg Asn
65 70 75 80

Gln Xaa Arg Gly Pro Val Gly Asn Xaa Pro Leu Gly Thr Asp Val Val
85 90 95

Xaa Gln Ser Phe Pro Pro Leu Pro Xaa Met Arg Asn Phe
100 105

<210> 1207
<211> 84

<212> PRT
<213> Homo sapiens

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<400> 1207
Asn Xaa Lys Leu Ser Glu Gln Glu Leu Gln Phe Arg Arg Leu Ser Gln
1 5 10 15

Glu Gln Val Asp Asn Phe Thr Leu Asp Ile Asn Thr Ala Tyr Ala Arg
20 25 30

Leu Arg Gly Ile Glu Gln Ala Val Gln Ser His Ala Val Ala Glu Glu
35 40 45

Glu Ala Arg Lys Ala His Gln Leu Trp Leu Ser Val Glu Ala Leu Lys
50 55 60

Tyr Ser Met Xaa Asp Leu His Leu Ala Glu Thr Pro Thr Ile Pro Leu
65 70 75 80

Gly Ser Gly Ser

<210> 1208
<211> 57
<212> PRT
<213> Homo sapiens

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<400> 1208
Pro Cys Ser Thr Val Pro Val Thr Thr Glu Val Ser Tyr Ala Gly Cys
1 5 10 15

Thr Lys Thr Val Leu Met Asn His Cys Ser Gly Ser Cys Gly Thr Phe
20 25 30

Val Met Tyr Ser Xaa Gln Ala Gln Ala Leu Asp His Ser Xaa Leu Leu
35 40 45

Leu Gln Arg Xaa Xaa Asn Gln Pro Ala
50 55

<210> 1209
<211> 84
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<400> 1209
Ala Xaa Asp Gln Ala Gly Glu Val Asp His Thr Leu Leu Gly Gln Cys
1 5 10 15

Thr Gly Gly Gly Tyr Phe Met Gln Phe Xaa Thr Ser Ser Gly Ser Ala
20 25 30

Glu Glu Ala Ala Leu Leu Glu Ser Arg Ile Leu Tyr Pro Lys Arg Lys
35 40 45

Gln Gln Cys Leu Gln Phe Phe Tyr Lys Met Xaa Gly Glu Val Leu Xaa
50 55 60

Asp Arg Leu Arg Cys Leu Gly Xaa Gly Gly Asp Asp Ser Thr Gly Asn
65 70 75 80

Val Arg Asn Trp

<210> 1210
<211> 129
<212> PRT
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<400> 1210
Leu Leu Asn Asp Ala Val Thr Val Val Leu Tyr His Leu Phe Glu Glu
1 5 10 15

Phe Ala Asn Tyr Glu His Val Gly Ile Val Asp Ile Phe Leu Gly Phe
20 25 30

Leu Ser Phe Phe Val Val Ala Leu Gly Gly Val Leu Val Gly Val Val
35 40 45

Tyr Gly Val Ile Ala Ala Phe Thr Ser Arg Phe Thr Ser His Ile Arg
50 55 60

Val Ile Glu Pro Leu Phe Val Phe Leu Tyr Ser Tyr Met Ala Tyr Leu
65 70 75 80

Ser Ala Glu Leu Phe His Leu Ser Gly Ile Met Ala Leu Ile Ala Ser
85 90 95

Gly Val Val Met Arg Pro Tyr Val Gly Xaa Gln His Phe His Lys Phe
100 105 110

Pro Gln Gln His Gln Ile Ile Ser Trp Lys Met Xaa Glu Gln Arg Xaa
115 120 125

Xaa

<210> 1211
<211> 43
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<400> 1211
Leu His Ala Phe Cys Xaa Ile Asn Asn Ile Lys Pro Ser Trp Thr Arg
1 5 10 15

Xaa Asn Thr Leu Met Phe Ile His Leu Ser Pro Ile Leu Leu Leu Ser
20 25 30

Leu Asn Pro Asp Ile Ile Thr Gly Phe Ser Ser
35 40

<210> 1212
<211> 29
<212> PRT
<213> Homo sapiens

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<400> 1212
Gln Gly Phe Lys Val Glu Arg Met His Ile Thr Asp Met Lys Leu Ala
1 5 10 15

Xaa Leu Pro Xaa Leu Glu Ala Leu Gly Val Xaa Val Asn
20 25

<210> 1213
<211> 137
<212> PRT
<213> Homo sapiens

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Ala Lys Val His Pro Asn Ser Val His Ile Cys Ala Val Val Val Glu
1   5   10   15

Tyr Glu Thr Lys Ala Gly Arg Ile Asn Lys Gly Val Xaa Thr Asn Trp
            20   25   30

Leu Arg Ala Lys Glu Pro Ala Gly Glu Asn Gly Gly Arg Ala Leu Val
        35   40   45

Pro Met Phe Val Arg Lys Ser Gln Phe Arg Leu Pro Phe Lys Ala Thr
    50   55   60

Thr Pro Val Ile Met Xaa Gly Pro Gly Thr Gly Val Xaa Pro Phe Ile
65   70   75   80

Gly Xaa Ile Gln Glu Arg Ala Trp Leu Arg Gln Xaa Gly Lys Glu Val
                85   90   95

Gly Glu Thr Leu Leu Asn Tyr Gly Cys Arg Arg Ser Asp Glu Asp Tyr

100 105 110

Leu Xaa Arg Xaa Glu Leu Ala Gln Phe His Arg Asp Gly Ala Leu Thr
115 120 125

Gln Leu Asn Val Ala Phe Xaa Arg Xaa
130 135

<210> 1214
<211> 207
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Ala Ser Xaa His His Ser Ala Cys Phe Leu Gly Pro Glu Ile Met Pro
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Leu Gly Leu Leu Trp Leu Gly Leu Xaa Leu Leu Gly Ala Leu His Ala
20 25 30

Gln Ala Gln Asp Ser Thr Ser Asp Leu Ile Pro Ala Pro Pro Leu Ser
35 40 45

Lys Val Pro Leu Gln Xaa Asn Phe His Asp Asn Gln Phe His Gly Lys
50 55 60

Trp Tyr Val Val Arg Leu Ala Arg Asn Ala Ile Leu Arg Xaa His Lys
65 70 75 80

Asp Pro Gln Xaa Met Tyr Ala Thr Ile Tyr Glu Leu Lys Glu Thr Arg
85 90 95

Xaa Thr Met Ser Leu Arg Leu Phe Lys Lys Lys Lys Cys Asp Tyr Leu
100 105 110

Asp Gln Glu Phe Trp Ser Lys Val Ala Xaa Arg Arg Ile Pro Pro Trp
115 120 125

Gly Pro Leu Lys Leu Pro Trp Xaa Asn Gln Phe Pro Pro Ser Asn Cys
130 135 140

Xaa His Gln Leu Gln Xaa Pro Ser Phe Gly Phe Leu Pro Xaa Asn Phe
145 150 155 160

Ser Lys Gln Gly Xaa Leu Pro Xaa Pro Xaa Phe Arg Lys Asn Lys Glu
165 170 175

Leu Ile Pro Xaa Leu Lys Glu Lys Phe Ser Xaa Leu Pro Phe Leu Gly
180 185 190

Pro Pro Lys Xaa Lys Phe Val Phe Pro Phe Pro Thr Asn Ile Xaa
195 200 205

<210> 1215
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<400> 1215
Gly Ser His Thr Ala Arg Arg Leu Gly Arg Leu Arg Gly Ser Xaa Ala
1 5 10 15

Arg Leu Xaa Gly Pro Arg Arg Ala Xaa Gly Gly Lys Met Ala Xaa Gly
20 25 30

Gly Gly Asp Leu Ser Thr Arg Xaa Leu Asn Xaa Cys Ile Ser Pro Val
35 40 45

Ala Asn Glu Met Asn His Leu Pro Ala His Xaa His Asp Leu Gln Arg
50 55 60

Xaa Phe Thr Glu Xaa
65

<210> 1216
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<212> PRT
<213> Homo sapiens

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<400> 1216
Leu Asn Pro Leu Gly Ile Lys Tyr Ile Val Ala Arg Pro Val Tyr Ser
1 5 10 15

Thr Asn Ala Phe Glu Glu Asn His Lys Lys Thr Gly Arg His His Lys
20 25 30

Thr Phe Leu Asp His Leu Lys Val Cys Xaa Asn Cys Ser Pro Gln Lys
35 40 45

Ala Arg Glu Leu Xaa Ser Leu Xaa Phe Pro
50 55

<210> 1217
<211> 144
<212> PRT
<213> Homo sapiens

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<400> 1217
Ala Gly Leu Gln Met Gly Arg Ser Arg Ser Arg Ser Pro Arg Arg Glu
1 5 10 15

Arg Arg Arg Ser Arg Ser Thr Ser Arg Glu Arg Glu Arg Arg Arg Arg
20 25 30

Glu Arg Ser Arg Ser Arg Glu Arg Asp Arg Arg Arg Ser Arg Ser Arg
35 40 45

Ser Pro His Arg Arg Arg Ser Arg Ser Pro Arg Arg His Arg Ser Thr
50 55 60

Ser Pro Ser Pro Ser Arg Leu Lys Glu Arg Arg Asp Glu Glu Lys Lys
65 70 75 80

Glu Thr Lys Glu Thr Lys Ser Lys Glu Arg Gln Ile Thr Glu Glu Asp
85 90 95

Leu Glu Gly Lys Thr Glu Glu Glu Ile Glu Met Met Lys Leu Met Gly
100 105 110

Phe Ala Ser Phe Asp Ser Thr Lys Gly Lys Lys Val Asp Xaa Ser Val
115 120 125

Asn Ala Tyr Ala Ile Asn Val Ser Gln Lys Arg Lys Tyr Arg Tyr Ala
130 135 140

<210> 1218
<211> 70
<212> PRT
<213> Homo sapiens

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<400> 1218
Gln Xaa Leu Cys Gln Ala Gly Asp Asp Ser Asn Ser Asn Lys Lys Asn
1 5 10 15

Ala Asp Leu Gln Val Leu Lys Pro Glu Pro Glu Leu Val Tyr Glu Asp
20 25 30

Leu Arg Gly Ser Val Thr Phe His Cys Ala Leu Gly Pro Glu Val Ala
35 40 45

Asn Val Ala Lys Ile Leu Ser Gly Arg Glu Trp Gly Lys Asp Ala Val
50 55 60

Ser Ser Leu Gln Ile Cys
65 70

<210> 1219
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<212> PRT
<213> Homo sapiens

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<400> 1219
Ser Thr His Ala Ser Ala Xaa Xaa Ser Leu Val Leu Arg Ile Ala Thr
1 5 10 15

Asp Asp Ser Lys Ala Val Cys Arg Leu Ser Val Lys Phe Gly Ala Thr
20 25 30

Leu Lys Ile Ser Arg Leu Leu Leu Glu Arg Ala Arg Glu Leu Asn Ile
35 40 45

Asp Ile Ile Gly Val Ser Phe His Val Gly Ser Gly Cys Thr Asp Pro
50 55 60

Gly Asp Leu Arg Ala Ser His Leu Arg Cys Pro Leu Cys Leu Arg His
65 70 75 80

Gly Glu Leu Arg Leu Val Ser Thr Cys Ile Cys Leu Ile Ser Val Val
85 90 95

Gly Phe Pro Gly Ile Xaa Arg Met
100

<210> 1220
<211> 89
<212> PRT
<213> Homo sapiens

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<400> 1220
Gly Thr Arg Xaa Cys Pro Xaa Arg Val Arg Val Ala Met Gly Xaa Ile
1 5 10 15

Glu Trp Ala Xaa Trp Ala Asn Glu Gln Ala Leu Ala Ser Gly Leu Ile
20 25 30

Leu Ile Thr Gly Gly Ile Val Ala Thr Ala Gly Arg Xaa Thr Xaa Trp
35 40 45

Tyr Phe Gly Ala Xaa Ser Ile Val Ala Gly Val Phe Val Cys Leu Leu
50 55 60

Glu Tyr Pro Arg Xaa Lys Arg Lys Lys Gly Ser Thr Met Val Arg Trp
65 70 75 80

Gly Gln Lys Tyr Met Thr Xaa Xaa Val
85

<210> 1221
<211> 141
<212> PRT
<213> Homo sapiens

<400> 1221
Asp Thr Phe Ile Arg His Ile Ala Leu Leu Gly Phe Glu Lys Arg Phe
1 5 10 15

Val Pro Ser Gln His Tyr Val His Val Pro Gly Glu Met Ala Gly Pro
20 25 30

Val Gly Glu Gly Gly Leu Pro Ala Leu His Arg Asp Leu Arg Val Pro
35 40 45

Ser Pro Lys Trp Phe Asp Gly Gln Arg Ala Ala Glu Asn His Gln Gly
50 55 60

Thr Leu Thr Glu Tyr Cys Gly Thr Leu Met Ser Leu Pro Thr Lys Ile
65 70 75 80

Ser Arg Cys Pro His Leu Leu Asp Phe Phe Lys Val Arg Pro Asp Asp
85 90 95

Leu Lys Leu Pro Thr Asp Asn Gln Thr Lys Lys Pro Glu Thr Tyr Leu
100 105 110

Met Pro Lys Asp Gly Lys Ser Thr Ala Thr Asp Ile Thr Gly Pro Ile
115 120 125

Ile Leu Gln Thr Tyr Arg Ala Ile Ala Asn Tyr Glu Lys
130 135 140

<210> 1222
<211> 29
<212> PRT
<213> Homo sapiens

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<221> SITE
<222> (24)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1222
Arg Cys Pro Val Thr Val Cys Gly Xaa Val His Gly Gln Phe His Asp
1 5 10 15

Leu Met Glu Leu Phe Arg Ile Xaa Gly Lys Ser Pro Asp
20 25

<210> 1223
<211> 43
<212> PRT
<213> Homo sapiens

<220>
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<400> 1223
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Leu Xaa Xaa Gln Ile Xaa Tyr Xaa Thr Xaa Pro Thr Ser Leu Pro Arg
  1               5                  10                  15

Thr Ser Xaa Cys Leu His Ala Xaa Thr Ser Trp Lys Gln Ser Leu Leu
             20                  25                  30
```

Gly Cys Leu Asn Xaa Lys Leu Xaa Xaa Ala Thr
35 40

<210> 1224
<211> 94
<212> PRT
<213> Homo sapiens

<400> 1224
Ala Asp Ala Trp Gly Lys Thr Phe Ala Arg Tyr Leu Ser Phe Arg Arg
1 5 10 15

Asp Asn Asn Glu Leu Leu Leu Phe Ile Leu Lys Gln Leu Val Ala Glu
20 25 30

Gln Val Thr Tyr Gln Arg Asn Arg Phe Gly Ala Gln Gln Asp Thr Ile
35 40 45

Glu Val Pro Glu Lys Asp Leu Val Asp Lys Ala Arg Gln Ile Asn Ile
50 55 60

His Asn Leu Ser Ala Phe Tyr Asp Ser Glu Leu Phe Arg Met Asn Lys
65 70 75 80

Phe Ser His Asp Leu Lys Arg Lys Met Ile Leu Gln Gln Phe
85 90

<210> 1225
<211> 71
<212> PRT
<213> Homo sapiens

<220>
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<222> (10)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1225
Gly Arg Pro Thr Arg Pro Pro Thr Leu Xaa Leu Ala Trp Thr Ser Gly
1 5 10 15

Thr Asn Cys Thr Arg Phe Gly Ile Ala Ala Lys Tyr Gln Leu Asp Pro
20 25 30

Thr Ala Ser Ile Ser Ala Lys Val Asn Asn Ser Ser Leu Ile Gly Val
35 40 45

Gly Tyr Thr Gln Thr Leu Arg Pro Gly Val Lys Leu Thr Leu Ser Gly
50 55 60

Ser Gly Arg Trp Glu Glu His
65 70

<210> 1226
<211> 154
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1226
Gly Lys Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu Trp
1 5 10 15

Ile Ser Gly Ala Tyr Gly Asp Ile Val Met Thr Gln Ser Pro Asp Ser
20 25 30

Leu Ala Val Ser Leu Gly Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser
35 40 45

Gln Ser Val Leu Tyr Ser Ser Asn Asn Lys Asn Tyr Leu Thr Trp Tyr
50 55 60

Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Leu Tyr Trp Ala Ser
65 70 75 80

Thr Arg Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly
85 90 95

Thr Asp Phe Thr Leu Thr Ile Ser Xaa Leu Gln Ala Glu Asp Val Ala
100 105 110

Asp Tyr Tyr Cys Gln Gln Tyr Tyr Thr Thr Pro Trp Thr Phe Gly His
115 120 125

Trp Thr Xaa Val Glu Ile Xaa Arg Asn Cys Gly Cys Thr Xaa Cys Leu
130 135 140

Xaa Phe Pro Pro Ser Gly Xaa Gln Leu Lys
145 150

<210> 1227
<211> 101
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (32)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1227
Trp Leu Ile Leu Ala Val Ile Ser Val Tyr Asp Leu Val Ala Val Leu
1 5 10 15

Cys Pro Lys Gly Pro Leu Arg Met Leu Val Glu Thr Ala Gln Glu Xaa
20 25 30

Asn Glu Thr Leu Phe Pro Ala Leu Ile Tyr Ser Ser Thr Met Val Trp
35 40 45

Leu Val Asn Met Ala Glu Gly Asp Pro Glu Ala Gln Arg Arg Val Ser
50 55 60

Lys Asn Ser Lys Tyr Asn Ala Glu Ser Thr Glu Arg Ser His Lys Thr
65 70 75 80

Leu Leu Gln Arg Met Met Met Ala Gly Ser Val Arg Asn Gly Lys Pro
85 90 95

Arg Arg Thr Val Ile
100

<210> 1228
<211> 75
<212> PRT
<213> Homo sapiens

<220>
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<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (72)
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<400> 1228
Leu Ile Ser Gly Lys Asp Cys Ala Val Ile Val Thr Gln Lys Lys Val
1 5 10 15

Pro Asp Lys Leu Leu Xaa Ser Ser Thr Val Thr His Leu Phe Lys Xaa
20 25 30

Xaa Gly Asn Ile Gly Cys Xaa Lys Thr Gly Met Ser Ala Xaa Ser Arg
35 40 45

Ser Gln Val Gln Arg Ala Arg Tyr Xaa Ala Ala Asn Leu Glu Tyr Lys
50 55 60

Tyr Gly Tyr Glu Xaa Pro Val Xaa Met Pro Val
65 70 75

<210> 1229
<211> 46
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1229
Asn Thr Leu Ile Leu Xaa Pro Ser Lys Asn His Leu Lys Ala Ala Gly
1 5 10 15

His Leu Tyr Ile Val Met Glu Tyr Cys Asp Gly Arg Asp Leu Met Gln
20 25 30

Lys Ile Lys Gln Gln Lys Arg Lys Ser Tyr Phe Leu Lys Thr
35 40 45

<210> 1230
<211> 136
<212> PRT
<213> Homo sapiens

<220>
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<222> (51)

<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (64)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (73)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (129)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (134)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1230
Lys Thr Ile Arg Cys Val Cys Thr Trp Arg Leu His Leu Leu Ala Ser
1   5   10   15

Thr Tyr Ala Cys Ser Gln Asn Thr Asn Lys Thr Cys Glu Glu Cys Leu
            20   25   30

Lys Asn Val Ser Cys Leu Trp Cys Asn Thr Asn Lys Leu Val Leu Asp
        35   40   45

Tyr Gln Xaa Gln Ser Leu Ala Thr Gly Phe Pro Leu Leu Ile Asn Xaa
    50   55   60

Leu His Leu Gly Asn Phe Val Gly Xaa Asn Leu Glu Ala Leu Asn His
65   70   75   80

His Met Phe Gly Ser Pro Gly Asn Pro Pro Pro Gly Ala Leu Ala Ser
                85   90   95

Ala Ala Cys Leu Leu Ala Ala Arg Arg Lys Lys Glu Pro Glu Thr Arg
100 105 110

Thr Gly Ile Lys Glu Lys Arg Xaa Cys Val Xaa Pro Glu Arg Lys Ser
115 120 125

Xaa Ile Pro Ala Gly Xaa Thr Glu
130 135

<210> 1231
<211> 105
<212> PRT
<213> Homo sapiens

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<222> (3)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (84)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (93)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (102)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1231
Leu Pro Xaa Gly Ala Gly Gly Met Ser Lys Gly Leu Pro Ala Arg Gln
1 5 10 15

Asp Met Glu Lys Glu Arg Glu Thr Leu Gln Ala Trp Lys Glu Arg Val
20 25 30

Gly Gln Glu Leu Asp Arg Val Val Ala Phe Trp Met Glu His Ser His
35 40 45

Asp Gln Glu His Gly Gly Phe Phe Thr Cys Leu Gly Arg Glu Gly Arg
50 55 60

Val Tyr Asp Asp Leu Lys Tyr Val Trp Leu Gln Gly Arg Gln Val Trp
65 70 75 80

Met Tyr Cys Xaa Pro Val Pro His Phe Arg Ala Leu Xaa Pro Cys Ser
85 90 95

Ala Ser Gly Arg Ser Xaa Ser Arg Trp
100 105

<210> 1232
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (95)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1232
Asn Ser Ala Arg Ala Glu Val Thr Asp Glu Tyr Lys Asn Xaa Val Lys
1 5 10 15

Asn Arg Ser Val Tyr Ile Lys Gly Phe Pro Thr Asp Ala Thr Leu Asp
20 25 30

Asp Ile Lys Glu Trp Leu Glu Asp Lys Gly Gln Val Leu Asn Ile Gln
35 40 45

Met Arg Arg Thr Leu His Lys Ala Phe Lys Gly Ser Ile Phe Val Val
50 55 60

Phe Asp Ser Ile Glu Ser Ala Lys Lys Phe Val Glu Ala Pro Gly Gln
65 70 75 80

Lys Tyr Lys Glu Pro Asp Leu Leu Ile Leu Phe Lys Ala Gly Xaa Phe
85 90 95

Ala Lys Lys

<210> 1233
<211> 80
<212> PRT

<213> Homo sapiens

<400> 1233

Pro Phe Gly Thr Gly Pro Glu Phe Pro Gly Leu Pro Ser Ser Ser Phe
1 5 10 15

Leu Arg His Arg Gly Val Phe Leu Thr Pro Leu Leu Ala Met Ser Ser
20 25 30

His Lys Thr Phe Arg Ile Lys Arg Phe Leu Ala Lys Lys Gln Lys Gln
35 40 45

Asn Arg Pro Ile Pro Gln Trp Ile Arg Met Lys Thr Gly Asn Lys Ile
50 55 60

Arg Tyr Asn Ser Lys Arg Arg His Trp Arg Arg Thr Lys Leu Gly Leu
65 70 75 80

<210> 1234
<211> 83
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1234

Val Thr Leu Xaa Lys Val Arg Leu Gln Val Pro Val Arg Asn Ser Arg
1 5 10 15

Val Asp Pro Arg Val Arg Arg Pro Thr Arg Pro Pro Thr Arg Pro Pro
20 25 30

Thr Arg Pro Pro Thr Arg Pro Leu Cys Arg Lys Met Gly Val Pro Tyr
35 40 45

Cys Ile Ile Lys Gly Lys Ala Arg Leu Gly Arg Leu Val His Arg Lys
50 55 60

Thr Cys Thr Thr Val Ala Phe Thr Gln Val Asn Ser Glu Arg Gln Arg
65 70 75 80

Arg Phe Gly

<210> 1235
<211> 161
<212> PRT
<213> Homo sapiens

<400> 1235
Arg Glu Gln Lys Leu Glu Leu His Arg Gly Ala Ala Ala Leu Glu Leu
1 5 10 15

Val Asp Pro Pro Gly Cys Arg Asn Ser Ala Arg Gly Ala Ala Thr Met
20 25 30

Val Arg Met Asn Val Leu Ala Asp Ala Leu Lys Ser Ile Asn Asn Ala
35 40 45

Glu Lys Arg Gly Lys Arg Gln Val Leu Ile Arg Pro Cys Ser Lys Val
50 55 60

Ile Val Arg Phe Leu Thr Val Met Met Lys His Gly Tyr Ile Gly Glu
65 70 75 80

Phe Glu Ile Ile Asp Asp His Arg Ala Gly Lys Ile Val Val Asn Leu
85 90 95

Thr Gly Arg Leu Asn Lys Cys Gly Val Ile Ser Pro Arg Phe Asp Val
100 105 110

Gln Leu Lys Asp Leu Glu Lys Trp Gln Asn Asn Leu Leu Pro Ser Arg
115 120 125

Gln Phe Gly Phe Ile Val Leu Thr Thr Ser Ala Gly Ile Met Asp His
130 135 140

Glu Glu Ala Arg Arg Lys His Thr Gly Gly Lys Ile Leu Gly Phe Phe
145 150 155 160

Phe

<210> 1236
<211> 152
<212> PRT
<213> Homo sapiens

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<222> (2)
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<220>
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<222> (152)
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<400> 1236
Leu Xaa Arg Ala Leu Phe Lys Arg Asn Pro Ala Asn Arg Leu Gly Ser
1 5 10 15

Gly Pro Asp Gly Ala Glu Glu Ile Lys Arg His Val Phe Tyr Ser Thr
20 25 30

Ile Asp Trp Asn Lys Leu Tyr Arg Arg Glu Xaa Thr Pro Pro Phe Lys
35 40 45

Pro Ala Val Ala Gln Pro Asp Asp Thr Phe Tyr Phe Asp Thr Glu Phe
50 55 60

Thr Ser Arg Thr Pro Lys Asp Ser Pro Gly Ile Pro Pro Ser Ala Gly
65 70 75 80

Ala His Gln Leu Phe Arg Gly Phe Ser Phe Val Ala Thr Gly Leu Met
85 90 95

Glu Asp Asp Gly Lys Pro Arg Ala Pro Xaa Ala Pro Leu His Ser Val
100 105 110

Val Gln Gln Leu His Gly Lys Asn Leu Val Phe Ser Asp Gly Tyr Val
115 120 125

Val Lys Glu Thr Ile Gly Val Gly Ser Xaa Ser Glu Cys Lys Arg Cys
130 135 140

Val His Lys Gly Pro Xaa Xaa Xaa
145 150

<210> 1237
<211> 73
<212> PRT
<213> Homo sapiens

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<221> SITE
<222> (6)
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<220>
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<220>
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<222> (57)
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<222> (71)
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<400> 1237
Arg Asp Thr Ser His Xaa Val Ala Gly Ala Leu Arg Pro Xaa Val Gln
1 5 10 15

Ala Thr Val Xaa Ala Thr Xaa Xaa Gln Pro Val Leu Asp Leu Lys Arg
20 25 30

Pro Phe Leu Ser Arg Glu Ser Leu Ser Gly Xaa Ala Cys Asp Arg Leu
35 40 45

Val Val Asp Ser Xaa Gly Ala Gln Xaa Pro Cys Phe Phe Leu Leu Ile
50 55 60

Pro Thr Gln Thr Ser Arg Xaa Leu Ile
65 70

<210> 1238
<211> 41
<212> PRT
<213> Homo sapiens

<400> 1238
Met Gly Phe Ser Leu Ile Pro Ser Ser Phe Ser His Leu Ala Asp Asn
1 5 10 15

Thr Thr Ser Leu Thr Asp Lys His Leu Asp Pro Ile Arg Glu Asn Leu
20 25 30

Gly Lys His Trp Glu Lys Leu Cys Pro
35 40

<210> 1239
<211> 42

<212> PRT
<213> Homo sapiens

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<220>
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<222> (39)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1239
His Asp Ser Cys Lys Lys Xaa Thr Lys His Tyr Glu Met Leu Ala Asn
1 5 10 15

Arg Xaa Ala Ala Asn Gly His Cys Ile Asp Ile Tyr Xaa Cys Ala Pro
20 25 30

Asp Gln Thr Gly Leu Leu Xaa Leu Xaa Cys
35 40

<210> 1240
<211> 106
<212> PRT
<213> Homo sapiens

<220>
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<222> (13)
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<222> (65)
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<222> (98)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1240
Leu Glu Ser Leu Gln Glu Asn His Phe Gln Glu Asp Xaa Gln Phe Leu
1 5 10 15

Gly Ala Val Met Pro Arg Leu Gly Ile Gly Met Asp Thr Cys Val Ile
20 25 30

Pro Leu Lys His Gly Gly Leu Ser Leu Val Gln Thr Thr Asp Tyr Ile
35 40 45

Tyr Pro Ile Val Asp Asp Pro Tyr Met Met Thr Pro Ala Val Ala Glu
50 55 60

Xaa Arg Pro Val Pro Cys Pro His Leu Ala Leu Gly Ile Lys Gln Leu
65 70 75 80

Gly Arg Lys Gln Glu Ser Pro Leu Leu Leu Leu Gln Leu Asn Thr Cys
85 90 95

Trp Xaa Asp Asn Met Cys Gln Cys Pro Gln
100 105

<210> 1241
<211> 77
<212> PRT
<213> Homo sapiens

<400> 1241
Ser Arg Pro Val Gly Ser Gly Cys Asp Asn Pro Ser Asn Val Glu Lys
1 5 10 15

Pro Gly Ala Cys Leu Ala Leu Cys Leu Leu Pro Ser Gly Gly Thr Glu
20 25 30

Ser Gln Asp Gln Ser Ser Leu Cys Lys Gln Pro Pro Ala Gly His Lys
35 40 45

Arg Ser Arg Ser Met Leu Asn Ser Asn Gly Ser Val Thr Val Val Val
50 55 60

Phe Phe Lys Pro Ala Asp Thr Cys His Thr Ala Gly Ile
65 70 75

<210> 1242
<211> 110
<212> PRT
<213> Homo sapiens

<220>
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<222> (103)
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<400> 1242
Arg Leu Ala Ile Thr Gly Leu Thr Met Glu Arg Lys Val Leu Ala Leu
1 5 10 15

Gln Ala Arg Lys Lys Arg Thr Lys Ala Lys Lys Asp Lys Ala Gln Arg
20 25 30

Lys Ser Glu Thr Gln His Arg Gly Ser Ala Pro His Ser Glu Ser Asp
35 40 45

Leu Pro Glu Gln Glu Glu Glu Ile Leu Gly Ser Asp Asp Asp Glu Gln
50 55 60

Glu Asp Pro Asn Asp Tyr Cys Lys Gly Gly Tyr His Leu Val Lys Ile
65 70 75 80

Gly Asp Leu Phe Asn Gly Arg Tyr His Val Ile Arg Lys Leu Gly Trp
85 90 95

Gly His Phe Ser Thr Val Xaa Val Ile Met Gly Tyr Ser Ser
100 105 110

<210> 1243
<211> 101
<212> PRT
<213> Homo sapiens

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (94)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1243
Xaa Thr Ile Xaa Glu Glu Xaa Val Pro Leu Xaa Val Pro Val Arg Asn
1   5   10   15

Ser Arg Val Asp Pro Arg Val Arg Tyr Asp Asn Leu Ile Thr Pro Ala
            20   25   30

Met Xaa Gly Ala Gly Xaa Leu Gln Gly Asn Val Asp Ser Cys Gln Gly
        35   40   45

Asp Xaa Gly Gly Pro Leu Val Thr Ser Lys Asn Asn Ile Trp Xaa Leu
    50   55   60

Ile Gly Asp Thr Ser Trp Gly Ser Gly Xaa Ala Lys Ala Tyr Arg Pro
65   70   75   80

Gly Val Tyr Gly Asn Xaa Met Xaa Phe Thr Asp Trp Xaa Xaa Arg Gln
                85   90   95

Met Arg Ala Asp Gly
            100

<210> 1244
<211> 80
<212> PRT
<213> Homo sapiens

<400> 1244
Gly Val Tyr Thr Met Ser Lys Ala His Pro Pro Glu Leu Lys Lys Phe
1   5   10   15

Met Asp Lys Lys Leu Ser Leu Lys Leu Asn Gly Gly Arg His Val Gln
            20   25   30

Gly Ile Leu Arg Gly Phe Asp Pro Phe Met Asn Leu Val Ile Asp Glu
        35   40   45

Cys Val Glu Met Ala Thr Ser Gly Gln Gln Asn Asn Ile Gly Met Val
    50   55   60

Val Ile Arg Gly Asn Ser Ile Ile Met Leu Glu Ala Leu Glu Arg Val
65   70   75   80

<210> 1245
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (128)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1245
Phe Ile Met Asp Asn Leu Ser Ser Glu Glu Ile Gln Gln Arg Ala His
1   5   10   15

Gln Ile Thr Asp Glu Ser Leu Glu Ser Thr Arg Arg Ile Leu Gly Leu
            20   25   30

Ala Ile Glu Ser Gln Asp Ala Gly Ile Lys Thr Ile Thr Met Leu Asp
        35   40   45

Glu Gln Lys Glu Gln Leu Asn Arg Ile Glu Glu Gly Leu Asp Gln Ile
    50   55   60

Asn Lys Asp Met Arg Glu Thr Glu Lys Thr Leu Thr Glu Leu Asn Lys
65   70   75   80

Cys Cys Gly Leu Cys Val Cys Pro Cys Asn Arg Thr Lys Asn Phe Glu
                85   90   95

Ser Gly Lys Ala Tyr Lys Thr Thr Trp Gly Asp Gly Gly Glu Asn Ser
            100   105   110

Pro Cys Asn Val Val Ser Lys Gln Pro Gly Pro Val Thr Asn Gly Xaa
        115   120   125

Leu

<210> 1246
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (134)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1246
Ser Thr Glu Gly Tyr Gly Cys Glu Lys Thr Thr Glu Gly Tyr Gly Cys
1 5 10 15

Glu Lys Thr Thr Glu Gly Gly Ser Met Ala Tyr Pro Gly His Pro Gly
20 25 30

Ala Gly Gly Gly Tyr Tyr Pro Gly Gly Tyr Gly Gly Ala Pro Gly Gly
35 40 45

Pro Ala Phe Pro Gly Gln Thr Gln Asp Pro Leu Tyr Gly Tyr Phe Ala
50 55 60

Ala Val Ala Gly Gln Asp Gly Gln Ile Asp Ala Asp Glu Leu Gln Arg
65 70 75 80

Cys Leu Thr Gln Ser Gly Ile Ala Gly Gly Tyr Lys Pro Phe Asn Leu
85 90 95

Glu Thr Cys Arg Leu Met Val Ser Met Leu Asp Arg Asp Met Ser Gly
100 105 110

Thr Met Gly Phe Asn Glu Phe Lys Glu Leu Trp Ala Val Leu Asn Gly
115 120 125

Trp Arg Gln His Phe Xaa Asn Phe
130 135

<210> 1247
<211> 87
<212> PRT
<213> Homo sapiens

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (43)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (78)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (83)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1247
His Ser Gly Gly Pro Xaa Arg Pro Ala Val Ala Asp Val Gly Leu Gly
1 5 10 15

Gly Arg Ala Arg Arg Arg Xaa Pro Thr Gly Ala Ser Thr Trp Gly Thr
20 25 30

Ser Xaa Arg Arg Ala Arg Glu Gly Thr Trp Xaa Asp Leu Phe Tyr Lys
35 40 45

Tyr Xaa Arg Ile Arg Glu Ile Glu Leu Lys Asn Arg Xaa Xaa Ser Ser
50 55 60

Cys Arg Pro Ser Cys Ala Ser Arg Asn Pro Arg Asp Ala Xaa Asp Ala
65 70 75 80

Ile Tyr Xaa Lys Lys Trp Leu

85

<210> 1248
<211> 112
<212> PRT
<213> Homo sapiens

<220>
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<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (57)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (58)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (68)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (84)
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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (103)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (106)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1248
Xaa Ser Xaa Phe Gly Xaa Pro Ala Arg Arg Ser Gly Pro Glu Leu Pro
1 5 10 15

Gly Arg Pro Thr Arg Pro Ala Thr Ile Leu Lys Gln Met Gln Val Leu
20 25 30

His Pro Ala Ala Arg Met Leu Xaa Glu Leu Xaa Lys Ala Gln Asp Ile
35 40 45

Glu Ala Gly Asp Gly Thr Thr Ser Xaa Xaa Ile Ile Ala Gly Ser Leu
50 55 60

Leu Asp Ser Xaa Thr Lys Leu Leu Gln Lys Gly Ile His Pro Thr Ile
65 70 75 80

Ile Ser Glu Xaa Phe Gln Lys Ala Leu Glu Lys Gly Ile Glu Xaa Leu
85 90 95

Thr Asp Met Xaa Arg Pro Xaa Glu Leu Xaa Asp Arg Glu Thr Leu Val
100 105 110

<210> 1249

<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (110)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1249
Lys Phe Met Asn Ser Arg Val Phe Lys Lys Ile Gln Ala Leu Lys Ala
1   5   10   15

Ser Pro Ser Lys Lys Arg Cys Asn Ser Ile Ala Ala Leu Lys Ala Thr
            20   25   30

Ser Gln Glu Ile Val Ser Ser Ile Ser Gln Glu Trp Lys Asp Glu Lys
        35   40   45

Arg Asp Leu Leu Thr Glu Gly Gln Ser Phe Ser Ser Leu Asp Glu Glu
    50   55   60

Ala Leu Gly Ser Arg His Arg Pro Asp Leu Val Pro Ser Thr Pro Ser
65   70   75   80

Leu Phe Glu Ala Ala Ser Leu Ala Thr Thr Ile Ser Leu Leu Pro Ile
                85   90   95

Arg Gln Trp Ala Leu Ser Thr Arg Gln Gly Leu Gln Phe Xaa Gln Thr
            100   105   110

Arg

<210> 1250
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (53)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (75)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1250
Gly Xaa His Val Phe Arg Asn Ile His Lys Thr Asn Leu Cys Asp Leu
1 5 10 15

Ile Thr Ser Leu Leu Cys Leu Xaa Val Leu Leu Pro Thr Lys Glu Leu
20 25 30

Asn Glu His Phe Xaa Ser Lys Leu Lys Ala Pro Ile Pro Ile Glu Leu
35 40 45

Val Val Val Val Xaa Ala Thr Leu Thr Ser His Phe Gly Lys Leu His
50 55 60

Glu Asn Tyr Asn Ser Ser Ile Ala Gly His Xaa Pro
65 70 75

<210> 1251
<211> 151
<212> PRT
<213> Homo sapiens

<400> 1251
Leu Val Ser Asn Gly Pro Ala Asp Thr Leu Asp Leu Thr Tyr Trp Ile
1 5 10 15

Asp Gly Thr Arg His Val Val Ser Leu Glu Asp Val Gly Leu Ala Asp
20 25 30

Ser Gln Trp Lys Asn Val Thr Val Gln Val Ala Gly Glu Thr Tyr Ser
35 40 45

Leu His Val Gly Cys Asp Leu Ile Asp Ser Phe Ala Leu Asp Glu Pro
50 55 60

Phe Tyr Glu His Leu Gln Ala Glu Lys Ser Arg Met Tyr Val Ala Lys
65 70 75 80

Gly Ser Ala Arg Glu Ser His Phe Arg Gly Leu Leu Gln Asn Val His
85 90 95

Leu Val Phe Glu Asn Ser Val Glu Asp Ile Leu Ser Lys Lys Gly Cys
100 105 110

Gln Gln Gly Gln Gly Gly Arg Cys Val Val Lys Asn Ala Phe Tyr Ile
115 120 125

Leu Ala Trp Met Asp Phe Tyr Cys Asp Met Val Tyr Val Cys Val Cys
130 135 140

Met Cys Val His Ser Cys Leu
145 150

<210> 1252
<211> 56
<212> PRT
<213> Homo sapiens

<400> 1252
Lys Asn Gly Thr Ser Leu Cys Phe Ser Ser Ala Thr Met Ser Asp Lys
1 5 10 15

Pro Asp Met Ala Glu Ile Glu Lys Phe Asp Lys Ser Lys Leu Lys Lys
20 25 30

Thr Glu Thr Gln Glu Lys Asn Pro Leu Pro Ser Lys Glu Thr Ile Glu
35 40 45

Gln Glu Lys Gln Ala Gly Glu Ser
50 55

<210> 1253
<211> 74
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (44)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (45)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (49)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (54)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (60)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (62)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (65)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (67)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1253
Ala Glu Gly Pro Xaa Ala Ala Ala Leu Leu Leu Ser Leu Leu Leu Phe
1 5 10 15

Gly Phe Thr Leu Val Xaa Gly Thr Gly Ala Glu Lys Thr Gly Val Xaa
20 25 30

Pro Glu Leu Gln Ala Ala Pro Ala Thr Xaa Xaa Xaa Xaa Cys Val Leu
35 40 45

Xaa Asn Ser Glu Met Xaa Arg Thr Thr Ser Lys Xaa Leu Xaa Gly Gly
50 55 60

Xaa Val Xaa Pro Ser Ala Ser Leu Pro Gln
65 70

<210> 1254
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (94)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (109)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (112)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<220>
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<222> (121)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (125)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1254
Ser Pro Ala Arg Pro Leu Ile Arg Ser Asp Lys Met Lys Glu Thr Ile
1 5 10 15

Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala Gln Val Arg Ile Gly
20 25 30

Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val Val His Arg Thr Ala
35 40 45

Thr Ala Asp Asp Lys Lys Leu Gln Phe Ser Leu Lys Lys Leu Gly Val
50 55 60

Asn Asn Ile Ser Gly Ile Glu Glu Val Asn Met Phe Thr Asn Gln Gly
65 70 75 80

Thr Val Ile His Phe Asn Asn Pro Lys Val Gln Ala Ser Xaa Ala Ala
85 90 95

Asn Thr Phe Thr Ile Thr Gly His Ala Glu Thr Lys Xaa Leu Thr Xaa
100 105 110

Met Leu Pro Xaa Ile Leu Asn Gln Xaa Gly Ala Asp Xaa Leu Thr Lys
115 120 125

Phe

<210> 1255
<211> 188
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (31)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (99)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (102)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (165)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (183)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (188)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1255
Xaa Thr Ser Leu Glu Thr Pro Val Pro Val Leu Asn Ser Arg Leu Asp
1 5 10 15

Pro Arg Val Arg Met Thr Val Pro Gly Ala Ser Pro Glu Asp Xaa Trp
20 25 30

Val Lys Val Glu Tyr Ala Tyr Ser Asp Asn Ser Leu Asp Pro Gly Leu
35 40 45

Phe Val Glu Ser Thr Arg Lys Gly Ser Val Val Ser Arg Ala Asn Ser
50 55 60

Ile Gly Ser Thr Ser Ala Ser Ser Val Pro Asn Thr Asp Asp Glu Asp
65 70 75 80

Ser Asp Tyr His Gln Glu Ala Tyr Lys Glu Ser Tyr Lys Asp Arg Arg
85 90 95

Arg Arg Xaa Thr His Xaa Arg Leu Glu Gln Lys Arg Arg Asp Ala Ile
100 105 110

Lys Arg Gly Tyr Asp Asp Leu Gln Thr Ile Val Pro Thr Cys Gln Gln
115 120 125

Gln Asp Phe Ser Ile Gly Ser Gln Lys Leu Ser Lys Ala Ile Val Tyr
130 135 140

Lys Arg Pro Leu Thr Thr Phe Ser Phe Cys Thr Arg Arg Arg Lys Ser
145 150 155 160

Arg Arg Arg Arg Xaa His Val Thr Gln Gly Cys Thr Gly Leu Lys Ile
165 170 175

Met Lys Val Asn Tyr Glu Xaa Ile Val Lys Ala Xaa
180 185

<210> 1256
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (27)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (39)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (55)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (65)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1256
Leu Pro Cys Val Lys Val Pro Val Arg Asn Ser Arg Val Asp Pro Arg
1 5 10 15

Xaa Arg Ala Arg Met Leu Asn Leu Leu Leu Xaa Ala Leu Ala Val Leu
20 25 30

Ala Ser Arg Ala Tyr Ala Xaa Pro Ala Pro Gly Gln Ala Leu Gln Arg
35 40 45

Val Gly Ile Val Gly Gly Xaa Glu Ala Pro Arg Ser Lys Trp Pro Trp
50 55 60

Xaa Val
65

<210> 1257
<211> 146
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (12)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (131)
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<220>
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<222> (135)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (138)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (145)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1257
Gly Xaa Glu Gly Lys Xaa Phe Ser Val Ser Gly Xaa Trp Ser Ser Thr
1   5   10   15

Ala Val Ala Ala Ala Leu Glu Leu Val Asp Pro Pro Gly Cys Arg Asn
            20   25   30

Ser Ala Arg Ala Ala Gln Gln Arg Leu Thr Leu Cys Leu Arg Gly Arg
        35   40   45

Glu Ser Pro Gly Gly Arg His Gly Gly Val Gly Glu Pro Ala Gln Glu
    50   55   60

Asn Gly Val Gln Val Phe Asn Asp Gly Ser Ser Arg Glu Leu Met Asn
65   70   75   80

Leu Thr Gly Thr Ile Pro Val Pro Tyr Arg Gly Asn Thr Tyr Asn Ile
                85   90   95

Pro Ile Cys Leu Trp Leu Leu Asp Thr Tyr Pro Tyr Asn Pro Pro Ile
            100   105   110

Cys Phe Val Lys Pro Thr Ser Ser Met Thr Ile Lys Thr Gly Lys His
        115   120   125

Val Asp Xaa Pro Lys Lys Xaa Gly Gly Xaa Lys Lys Gly Lys Ile Leu
    130   135   140

Xaa Phe
145

<210> 1258
<211> 35
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (20)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (27)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (32)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1258
Xaa Ile Pro Pro Asp His Gln Thr Leu Ile Phe Ala Gly Lys His Leu
1   5   10   15

Glu Asn Gly Xaa Xaa Leu Ser Asp Tyr Xaa Xaa His Lys Glu Ser Xaa
            20   25   30

Leu His Leu
        35

<210> 1259
<211> 73
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (11)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (43)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (48)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1259
Val Lys Val Cys Met Met Met Xaa Leu Leu Xaa His Arg Leu Leu Lys
1   5   10   15

Trp Ser Trp Ile Val Arg Ser Lys Leu Leu Leu Gln Asp Pro Pro Val
            20   25   30

Thr Tyr Ile Gln Gln Phe Ala Asp Ala Ala Xaa Asn Leu Thr Ser Xaa
        35   40   45

Asp Ser Glu Lys Trp Asn Ser Val Phe Pro Lys Pro Gly Thr Leu Val
    50   55   60

Gln Val Leu Glu Ala Ala Lys Phe Ala
65   70

<210> 1260
<211> 95
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (7)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (38)
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<222> (40)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (42)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (52)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (65)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (68)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (76)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (80)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1260
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Leu Cys Ser Thr Xaa Xaa Xaa Arg His Asn Ile Gln Lys Glu Leu Cys
  1               5                  10                  15

Leu His Ala Ala Gln Gly Leu Ala Gln Leu Lys Ala Cys Thr Tyr Lys
             20                  25                  30

Gly His Lys Thr Gly Xaa Thr Xaa Glu Xaa Ile Trp Glu Ile Gln Lys
         35                  40                  45

Asp Gln Leu Xaa Tyr Tyr Pro Phe Leu Lys Met Cys Leu Ser Ala Asn
     50                  55                  60

Xaa Glu His Xaa Ser Leu Val Asp Ala Thr His Xaa Asn His Ser Xaa
 65                  70                  75                  80

Asn Gly Tyr Leu Ala Lys Met Ile Lys Arg Ser Leu Lys Leu Thr
                 85                  90                  95
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<210> 1261
<211> 94
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (44)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (86)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (91)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1261
Phe Gly Thr Arg Lys Arg Met Glu Thr Lys Gly Ala Gly Val Thr Leu
1 5 10 15

Asn Val Leu Glu Met Thr Ser Glu Asp Leu Glu Asn Ala Leu Lys Ala
20 25 30

Val Ile Asn Asp Lys Ser Tyr Lys Glu Asn Ile Xaa Arg Leu Ser Ser
35 40 45

Leu His Lys Asp Arg Pro Val Glu Pro Leu Asp Leu Ala Val Phe Trp
50 55 60

Val Glu Phe Val Met Arg His Lys Gly Ala Pro His Leu Arg Pro Ala
65 70 75 80

Pro His Gly Pro His Xaa Val Pro Val Pro Xaa Pro Trp Pro
85 90

<210> 1262
<211> 66
<212> PRT
<213> Homo sapiens

<400> 1262
Gly Thr Gly Gln His Trp His Ser Gln Ala Val Gly Lys Gly Arg Asp

1 5 10 15

Ala Glu Val Val Ser Ile Leu Thr Phe Arg Gly Leu Phe Leu Phe Val
20 25 30

Leu Ile Phe Ala Arg Leu Ile Leu Lys Thr His Val Glu Glu Leu Lys
35 40 45

Glu Cys Leu Glu Asp Gln Lys Ser Pro Met Thr Gly Thr Lys Ala Thr
50 55 60

Asn Phe
65

<210> 1263
<211> 121
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (80)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1263
Asn Thr Met Ala Val Ala Ala Val Lys Trp Val Met Ser Lys Arg Thr
1 5 10 15

Ile Leu Lys His Leu Phe Pro Val Gln Asn Gly Ala Leu Tyr Cys Val
20 25 30

Cys His Lys Ser Thr Tyr Ser Pro Leu Pro Asp Asp Tyr Asn Cys Asn
35 40 45

Val Glu Leu Ala Leu Thr Ser Asp Gly Arg Thr Ile Val Cys Tyr His
50 55 60

Pro Ser Val Asp Ile Pro Tyr Glu His Thr Lys Pro Ile Pro Arg Xaa
65 70 75 80

Asp Pro Val His Asn Asn Glu Glu Thr His Asp Gln Val Leu Lys Thr
85 90 95

Arg Leu Glu Glu Lys Val Glu His Leu Glu Glu Gly Pro Met Ile Glu
100 105 110

Gln Leu Ser Lys Met Phe Leu Tyr Tyr
115 120

<210> 1264
<211> 101
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (67)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (96)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (100)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (101)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1264
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Val Ala Ser Gly Val Gly Arg Val Thr Val Asn Ala Tyr Val Ser Leu
 1               5                  10                  15

Phe Tyr Thr Ile Lys Arg Ala Gln Val Val Ser Pro Glu Arg Val Gly
            20                  25                  30

Ser Trp His Ile Gly Arg Pro Ser Asp Pro Val Gln Cys Leu Leu Ala
        35                  40                  45

Ile Leu Pro Glu Gln Ala Leu Lys Pro Lys Ser His Pro Arg Pro Val
    50                  55                  60

Ser Ala Xaa Ala Lys Ala Ser Leu Ser Ser Gly Arg Arg Gly Lys Gly
65                  70                  75                  80

Ala Gly Asp Gln Ala Leu Ala Leu Gly Pro Ser Phe Ser Pro His Xaa
                85                  90                  95

Gly Asn Lys Xaa Xaa
            100
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<210> 1265
<211> 43
<212> PRT
<213> Homo sapiens

<400> 1265
Asp Leu Leu Met Lys Met Thr Ile Ser Cys Cys Phe Tyr Pro Thr Ser
1 5 10 15

Ala Phe Ser Pro Phe Lys Ala Ala Val Ser Cys Leu Ile Lys Glu Tyr
20 25 30

Trp Pro Val Leu Gln Ile Leu Thr Gly Phe Gly
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Gly Ser Trp Pro Gly Ala Xaa Gly Xaa Arg Asp Gly Ser His Gly Xaa
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Arg Leu Xaa Ala His Gly Pro Ile Asn Leu Glu Arg Ile
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<210> 1267
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<400> 1267

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Asn Leu Xaa Leu Val Phe Leu Leu Phe Phe Val Leu Val Asn Leu Gly
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Ser Asn Val Ile Arg Asn Ser Leu Trp Xaa Xaa Ala Thr Asp Ala Gln
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Pro Val Xaa Val Asp Tyr Ser Ser Ser Asn Xaa
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Leu Asn Ser Lys Lys Lys Lys Lys Lys Lys Lys Xaa Gly Gly Gly Arg
20 25 30

Gly Lys Lys Lys Xaa Glu Xaa Glu Xaa Leu Lys Lys Gly Arg Gly Ala
35 40 45

Pro

<210> 1269
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<400> 1269
Pro Thr Leu Pro Glu Glu Asn Ser Val Phe Phe Thr Phe His Thr Val
1 5 10 15

Phe Pro Met Arg Glu Gly Ala Gln Pro Glu Ser Thr Thr Ile Met Val
20 25 30

Lys Phe Pro Thr Glu Ser Ser Cys Glu Trp Ile Ile Arg Lys Asn Glu
35 40 45

Glu Ser Lys Arg Gln Lys Ser Lys Asn Arg Trp Gly Leu
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Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Xaa Xaa Xaa
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Pro Arg Arg Val Thr Arg Pro Leu Met Met Gly Leu Gln Gly Ser Ser

20 25 30

Gly Leu Xaa Ala Xaa Thr Val Gln Arg Lys Arg Ala Gly Ile Val Thr
35 40 45

Gly Ser Asp Gly Xaa His Arg Ser Glu Arg Glu Xaa Ala Gly Thr Gly
50 55 60

Ile Val Thr Val Thr Val Thr Ala Ser Thr Asn Gly Gly Ser Gly Ala
65 70 75 80

Xaa Xaa Arg Gly Arg Asp Glu Ala Arg Ser Trp Gly Arg Trp Pro Gly
85 90 95

Gln Arg Val Gly Arg Phe Gly Gln Arg Gln Pro Arg Ile Leu Xaa Glu
100 105 110

Phe

<210> 1272
<211> 87
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Leu Ala Trp Xaa Ser Gln Gly Thr Gln Xaa Arg Ser Pro Pro Gly His
20 25 30

Asn Thr Xaa Lys Ala Ser Tyr Ser Gly Val Glu Ser Phe Gln Gln Pro
35 40 45

Gly Pro Val Leu Gly Xaa Tyr Ser His Pro Pro Tyr Arg Cys Val Tyr
50 55 60

Val Thr Leu Cys His Xaa Xaa Ser Xaa Thr Ile Xaa Asn Ser Gln Glu
65 70 75 80

Ser Pro His Phe Tyr Asn Leu
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<210> 1273
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His Lys Ala Pro Leu Glu His Leu Pro Gly Trp Gln Asp His Ala Ile
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Ser Val Glu Lys Val Leu Gly Arg Glu Val Leu Pro Val Pro His Gly
20 25 30

Val Arg Pro Cys Pro Cys Trp Gly Leu Trp Gly Gly Ile Trp Tyr Ser
35 40 45

Gly Gly Leu Ala Gln Leu Ser Leu Arg Ser Phe Pro Ile Arg Met Leu
50 55 60

Val Asn Ile Leu Arg Ser Ser Leu Phe Ser Asn Lys Glu Tyr Ser Phe
65 70 75 80

Asn Ser Cys Ser Ser Ser Gln Phe Thr Thr Pro Ile Cys Leu Ser Lys
85 90 95

Ile His Pro Asn Gly Ile Xaa Gly Xaa Gly Pro Pro Trp Ile Gln Ser
100 105 110

Val Ser Trp
115

<210> 1274
<211> 37
<212> PRT
<213> Homo sapiens

<400> 1274
Glu Leu Val Ser Ser Phe Phe Phe Phe Phe Phe Leu Phe Phe Gly Ser
1 5 10 15

Phe Lys Gly Asn Gly Pro Ser Met Ser Ile Phe Asn Ile Leu His Ser
20 25 30

Leu Phe Leu Trp Cys

35

<210> 1275
<211> 107
<212> PRT
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Asp Cys Gly Thr Leu Ile Ile Tyr His Ala Gly Ser Pro Gln Lys Pro
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Cys Ala His Glu Pro Leu Trp Ala Xaa Gly Glu Lys Arg Gly Leu Arg
20 25 30

Glu Leu Pro Glu Arg Ala Val Ser Trp Glu Gln Gly Asp Ile Ser Ser
35 40 45

Pro Xaa Thr Arg Asn Met Thr Gln Xaa Xaa Gly Asn Lys Lys Pro Ser
50 55 60

Pro Xaa Xaa Xaa Gly Gly Ala Arg Pro Leu Lys Ser Thr Met Xaa Ala
65 70 75 80

Gly Gly Ile Xaa Val Lys Xaa Ser Gly Phe Xaa Lys Asp His Ile Phe
85 90 95

Phe Ser Gln Phe Xaa Xaa Pro Xaa Phe Xaa Cys
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<210> 1276
<211> 85
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<400> 1276

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Xaa Ile Ile Xaa Ala Arg Lys Met Xaa Xaa Asn Xaa Gly Pro Gly Xaa
            20                  25                  30

Glu Gly Lys Glu Pro Phe Leu Val Ala Gly Asn Cys Val Gly Lys Glu
        35                  40                  45

Val Gln Ile Cys Ala Tyr Glu Ile Ser Arg Asn Arg Trp Asn Xaa Thr
    50                  55                  60

Pro Met Gln Leu Leu Leu Xaa Xaa Lys Gln Gly Ala Trp Ser Asn Gly
65                  70                  75                  80

Xaa Thr Leu Cys Leu
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<400> 1277
Trp Val Tyr Thr Val Val Arg Gln Val Ser Phe Thr Leu Leu Met Met
1 5 10 15

Cys Cys Cys His Gly Asn Pro Ala Gln Tyr Glu Arg Asn Arg Arg Phe
20 25 30

Xaa His Leu Val Tyr Val Leu Gly
35 40

<210> 1278
<211> 65
<212> PRT
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<400> 1278
Asn Tyr His Ser Gly Gly Pro Xaa Lys Thr Pro Ala Gly Asp His Leu
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Ala Xaa Trp Leu Lys Pro Pro Val Ser Ile Ser Lys Phe Xaa Pro Lys
20 25 30

Glu Gly Val Gly Xaa Lys Ile Trp Gly Asn Leu Ser Pro Phe Xaa Phe
35 40 45

Phe Pro Gly Thr Pro Pro Leu Xaa Gly Glu Thr Leu Ala Arg Gly Xaa
50 55 60

Xaa
65

<210> 1279
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<212> PRT
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<400> 1279
Val Ile Ala Asp Cys Ile Ala Leu Phe Leu Xaa Arg Leu Ser Ile Leu
1 5 10 15

Ile Gln Lys Val Ser Ile Phe Xaa Asn His Glu Ile
20 25

<210> 1280
<211> 22
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<213> Homo sapiens

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<400> 1280
Tyr Glu Gly His Phe Phe Phe Phe Phe Phe Phe Phe Phe Phe Phe Phe
1 5 10 15

Phe Xaa Pro Pro Pro Xaa
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<210> 1281
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<212> PRT
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<400> 1281
Xaa Xaa Leu Lys Asp Thr Cys Leu Lys Ala Glu Met Glu Ala Xaa Cys
1 5 10 15

Xaa Arg Arg Ile Leu Cys Xaa Asn Leu Ala Met Cys Phe Pro Cys Xaa
20 25 30

Trp Ala Asp Glu Cys Leu Leu Asn Asp Glu Ile Leu Thr Ser Lys Gly
35 40 45

Gly

<210> 1282
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<400> 1282
His Glu Pro Ala Ser Leu Ser Pro Ala Ala Trp Ala Arg Lys Val Cys
1 5 10 15

Gly Ser Phe Ser Gly Ser Asp Phe Xaa Thr Glu Leu His Arg Pro Thr
20 25 30

Xaa Leu Ser Pro Xaa Gly Leu Gln Gly Pro Gly Ser Arg Pro Lys Pro
35 40 45

Xaa Lys Ser Lys Thr Ser Leu Glu Lys Phe Arg Asp Arg Pro Gly Glu
50 55 60

Met Gly Xaa Arg Tyr Gly Val Ser His Leu Thr Pro Glu Asp Ala Xaa
65 70 75 80

Phe Ser Leu Gln Gly Ala
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<210> 1283
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Thr Pro Leu Ser Gln Asn Pro Ala Gln Ala Glu Arg Tyr Gly Ser Ala
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Ala Glu Pro Arg Leu Ala Ser Asp Ser Arg Ser Pro Ala Cys Pro Arg
20 25 30

Arg Arg Ala Ala Pro Pro Ser Thr Arg Pro Ala Arg Ala Gly Gly Arg
35 40 45

Val Pro Arg Arg Ala Pro Gly Pro Gly Ser Gly Ala Glu Cys Pro Ser

50 55 60

Ser Trp Glu Thr Gly Pro Gly Trp Lys Gly Gly Arg Leu Glu Asp Pro
65 70 75 80

Ser Leu Arg Thr Arg Ala Cys Xaa Ala Ile Xaa
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<210> 1284
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<400> 1284
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Phe Pro Gly Leu Pro Thr Phe Pro His Arg Cys Ser Tyr Xaa Tyr Met
20 25 30

Gln Asn Ile Cys Gln Ala Leu Cys Gln Leu Ser Cys Thr Tyr Gly Ile
35 40 45

Glu Thr Met Glu Leu Gly Thr Ser Trp Ile Phe Phe Leu
50 55 60

<210> 1285
<211> 63
<212> PRT
<213> Homo sapiens

<400> 1285

Leu Thr Lys Ser Phe Lys Ile Phe Cys Asp Asn Val Leu Ile Glu Ala
1 5 10 15

Tyr Ile Ile Leu Gln Phe Leu Glu Ser Lys Met Met Tyr Pro Leu Arg
20 25 30

Ile Tyr Thr Ser Cys Phe Ile Gly Leu Arg Gly Leu Ile Phe Ile Arg
35 40 45

Arg Asp Leu Leu Val Phe Thr Ile Cys Pro Leu Ser Trp His Val
50 55 60

<210> 1286
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<400> 1286
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1 5 10 15

Lys Gln Ile Met Val Phe Phe Arg Asn Leu Ile Xaa Val Tyr Ser Thr
20 25 30

Lys Tyr Phe
35

<210> 1287
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<212> PRT
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<400> 1287
Xaa Glu Gly Val Gly Phe Xaa Xaa Val Asp Gly Gly Gly Glu Gly Arg
1 5 10 15

Pro Pro Glu Leu Xaa Leu Met Gln Ser Phe Leu Ala Met Xaa Asn Leu
20 25 30

Ser Val Ile Val Leu Ile Ile Lys Phe Xaa Val Phe Lys Lys Xaa Xaa
35 40 45

Xaa Leu Ser Xaa Leu Xaa Phe Xaa Thr Pro Trp Lys Val Pro Xaa Gly
50 55 60

Gly Gly Ala Gln Ser Xaa Trp Phe Ser
65 70

<210> 1288
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Gln Phe Tyr Tyr Pro Val His Asn Ser Phe Thr Gln Xaa Ser Ser His
20 25 30

Gly Ile His Gly Ser Xaa Ser Phe Xaa Leu Pro Asp Gly Arg Asn Lys
35 40 45

Ile Ile His Phe Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
50 55 60

Lys Arg Xaa Ala Xaa Xaa Glu Asp Pro Ser Xaa Arg Xaa
65 70 75

<210> 1289
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Val Gly Pro Ile Ser Leu Phe Ser Ala Leu Leu
20 25

<210> 1290
<211> 41
<212> PRT
<213> Homo sapiens

<400> 1290
Asn Ser Ala Arg Ala His Leu His Leu Pro His Ser Pro Pro Leu Leu
1 5 10 15

Val Pro Asp Thr Ser Thr Pro Thr Trp Ser Ser Pro Ile Ala His Lys
20 25 30

Arg Gly Gly Thr Arg Asp Glu Leu Ser
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Ser Arg Arg Pro Gly Pro Arg Gly Leu Val Xaa Ala Ser Gly Arg Gly
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Pro Gly Ser Ser Gln Ser Phe Pro Ser Pro Asn Asp Val Ala Phe Phe
             20                  25                  30

Val Val Cys Phe Arg Xaa Leu Lys Gln Pro Arg Arg Arg Leu Tyr Trp
         35                  40                  45

Leu Ser Ala Leu Ala Thr Ala Val Val Met Val Thr Gly Pro Asn Ser
     50                  55                  60

Arg Trp Pro Lys Pro Thr Cys His Arg Ala Gly Ser Leu Val Gly Arg
 65                  70                  75                  80

Xaa Gln Ala Arg Gly Xaa Ala Xaa Ala Glu His Ser Phe
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Leu Gly Pro Cys Pro Gly Arg Val Ile Leu Cys Ser Glu Ala Ile Ser
20 25 30

Gly Thr Gly Pro Pro Arg Pro Thr Pro Pro Glu His Gly Ser Arg Leu
35 40 45

Pro Gln Pro Ser Trp Leu Arg Arg Leu Ser Glu Pro Arg Gly Gly Leu
50 55 60

Glu Gly Arg Phe Val Cys Arg Asp Gly Ala Arg Ala Gln Val Leu Asp
65 70 75 80

Val Val Cys Ile Glu Arg Pro Lys Ala Gly Gly Lys Cys Thr Gly His
85 90 95

Lys Arg Ser Leu Ser Cys Asp Ala Gln Val Leu Arg Ser Gly Arg Xaa
100 105 110

Pro Ala Gly Ser Gly His Xaa Trp Val His Arg Gly Ala Phe Gln Thr
115 120 125

Asn Met
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Trp Phe Pro His Ser Arg Cys Phe Xaa Ile Arg Ile Arg Val Leu Leu
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Glu Arg Xaa Ser Cys Ser Xaa Tyr Arg Ile Val Val Val Xaa Phe
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<210> 1294
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Gly Gly Xaa Val Pro Asn Cys Pro Tyr Ser Glu Cys Val Leu Gln Leu
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Thr Gly Xaa Trp Xaa Tyr Xaa Val Val Asp Trp Glu Lys Xaa Trp Gly

20 25 30

Tyr Pro Thr
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Phe Gln Phe Ala Asn Arg Thr Asn Thr Gly Glu Asn Leu Pro Lys Thr
1 5 10 15

Leu Val Ile Lys Tyr Ile Ser Ser Thr Phe Arg Ser Phe Phe Phe Trp
20 25 30

Asp Ser Val Ser Asn Lys Xaa Ile Lys Ile Lys Xaa Gly Xaa His Phe
35 40 45

Ala Val Ala Ala Val Gln Arg Thr Leu Leu Asn Leu Tyr Val Arg His
50 55 60

Ser Met Leu Tyr Trp Gly Asn Leu Gly Arg Ser Xaa Val Phe Xaa Ile
65 70 75 80

His Ile Xaa Ile

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<400> 1296
Ser Xaa Asn Val Val Xaa Leu Pro Phe Val Lys Ala Pro Lys Xaa Arg
1 5 10 15

Asn Pro Asn Leu Thr Cys Asn Thr Xaa Leu Thr Gln Asn Gly Ser Tyr
20 25 30

Ile Xaa Leu
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<210> 1297
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<212> PRT
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<400> 1297
Gly Val Leu Ala Arg Ala Xaa Xaa Xaa Pro Gly Ala Ala Asp Gly Arg
1 5 10 15

Ala Arg Leu Cys Gly Pro Glu Val Gly Ala Xaa Xaa Ala Lys Val Ala
20 25 30

Gly Ala Ala Glu Pro Asp Glu Asp Gly Gly Arg Ser Gly Phe Gly Thr
35 40 45

Ala Glu Thr Thr His Arg Ala Ser Ala Trp Ala Arg Arg Ser Asp Ala
50 55 60

Val Val Pro Gly Arg His Ser Gly Arg His Arg Asp Gly Gln Lys Xaa
65 70 75 80

Arg Arg Val Phe Val Val Phe Val Ala Val Met Met Asn Xaa Leu His
85 90 95

Xaa Trp Leu Gln Val Xaa
100

<210> 1298
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<212> PRT
<213> Homo sapiens

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<400> 1298
Cys Lys Gln Tyr Leu Thr Asn Pro Gln Val Leu Asn Tyr Gln Thr Cys
1 5 10 15

Ile Lys Asn Phe Gly Trp Gly Asp Leu Gly Ala Glu Pro Ser Leu Arg

20 25 30

Xaa Xaa His Ala Xaa Thr Ser Pro Val Lys Ala Asn Tyr Tyr Thr Arg
35 40 45

Leu Ile Gln
50

<210> 1299
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<212> PRT
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<400> 1299
Arg Thr Xaa Gln Gly Glu Gly Gln Arg Arg Arg Pro Cys Lys Ser Xaa
1 5 10 15

Val Lys Lys Lys Lys Xaa Xaa Xaa Pro Xaa Tyr Arg Leu Glu Glu Val
20 25 30

Lys Asp Lys Asp Gly Lys Pro Leu Leu Xaa Lys Glu Ser Xaa Gly Thr
35 40 45

Ala Ser Thr His Gly Val Glu Asp Phe Leu Leu Gly Trp Leu Cys Val
50 55 60

<210> 1300
<211> 58
<212> PRT
<213> Homo sapiens

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<400> 1300
Lys Met Lys Leu Cys Arg Lys Cys Ser Pro Gln His Asp Xaa Glu Arg
1 5 10 15

Asn Ser Gly Thr Arg Phe Phe Pro Val Pro Leu Phe Ser Gln Gly Ser
20 25 30

Ala Gly Ile Gln Gly Gln Arg Ile Ser Leu Pro Glu Cys Ala Lys Xaa
35 40 45

Xaa Glu Lys Gly Asn Cys Leu Ser Leu Xaa
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<210> 1301
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<212> PRT
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<400> 1301
Thr Leu Val Gln Xaa Val Val Ser Gly Ala Ser Val Xaa Gly Lys Ser
1 5 10 15

Pro Pro Tyr Xaa Lys Trp Asn Ser Pro Glu Pro Val Cys Glu Arg Xaa
20 25 30

Thr Gly Val Xaa Ser
35

<210> 1302
<211> 75
<212> PRT
<213> Homo sapiens

<400> 1302
Gln Glu Glu Ala Leu His Ile Leu Gly Phe Gln Pro Pro Phe Glu Asp
1 5 10 15

Ile Arg Phe Gly Pro Phe Thr Gly Asn Thr Thr Leu Met Arg Trp Phe
20 25 30

Arg Gln Ile Asn Asp His Phe His Val Lys Gly Cys Ser Tyr Val Leu
35 40 45

Tyr Lys Pro His Gly Lys Asn Lys Thr Ala Gly Glu Thr Ala Ser Gly
50 55 60

Ala Leu Ser Lys Leu Thr Arg Gly Ile Glu Arg
65 70 75

<210> 1303
<211> 26
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<400> 1303
Ala Xaa Xaa His His Pro Trp Xaa Xaa Leu Xaa Trp Glu Arg Phe Arg
1 5 10 15

Cys Asn Ile Asn Cys Asp Glu Asp Pro Lys
20 25

<210> 1304
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<400> 1304
Gly Arg Val Lys Xaa Phe Xaa Gly Ala Pro Gly Asn Xaa Ala Asp Xaa
1 5 10 15

Xaa Xaa Phe Arg Thr Gln Met Met Asp Leu Glu Leu Ala Met Xaa Arg
20 25 30

Gln Asn His Gly Leu Ser Ser Tyr Asp Xaa Gly Gly Xaa Val
35 40 45

<210> 1305
<211> 70
<212> PRT
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Lys Ser Glu Gly Xaa Met Phe Cys Glu Thr Phe Ile Phe Leu Lys Glu
1   5   10   15

Lys Xaa Lys Gly Arg Pro Ile Ser Ser Gln Asp His Thr His Xaa Xaa
20 25 30

Gly Xaa Gly His Xaa Xaa Ser Met Ala Xaa Phe Val Lys Phe Gly Cys
35 40 45

Phe Xaa Asn Xaa Xaa Leu Xaa Lys Trp Met Trp Pro Lys Thr Phe Xaa
50 55 60

Leu Gly Trp Xaa Gly Lys
65 70

<210> 1306
<211> 45
<212> PRT
<213> Homo sapiens

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<400> 1306
Xaa Leu Thr Val Lys Asp Ala Gly Gly Gln Xaa Ile Pro Gly Val Pro
1 5 10 15

Glu Xaa Ser Cys His Val Gly Val Lys Ala Glu Gly Ala Xaa Xaa Thr
20 25 30

Gln Xaa Asp Arg Gly Ala Arg Xaa Xaa Ser Gln Ala Phe
35 40 45

<210> 1307
<211> 38
<212> PRT
<213> Homo sapiens

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<400> 1307
Gln Ser Thr Arg Ala Glu Tyr Glu Ser Lys Ala Glu Gly Val Met Xaa
1 5 10 15

Gly Gln Ala Phe Arg Lys Phe Gln Gln Gly Ala Ala Gly Asn Met Lys
20 25 30

Gly Met Met Gly Ile Gln
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<210> 1308
<211> 59
<212> PRT
<213> Homo sapiens

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<400> 1308
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Xaa Val Ser Xaa Phe Arg Lys Pro Leu Xaa Cys Ala Asn His Ser Arg
  1               5                  10                  15

Lys Xaa Asn Leu Tyr Leu Gly Tyr Asn Thr Thr Val Ser Tyr Val Thr
            20                  25                  30

Xaa Ala Xaa Xaa Xaa Pro Leu Cys Xaa Xaa Xaa Xaa Ala Lys Xaa Xaa
        35                  40                  45

Xaa Arg Lys Lys Gly Lys Arg Lys Thr Asn Xaa
    50                  55
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1309
Gly Thr Arg Ser Leu Glu His Ala Ala Gly Leu Xaa Gly Leu Ser Gln
1 5 10 15

Val Cys Xaa Pro Arg Arg Xaa Ser Ala Arg Pro Val Gln Pro
20 25 30

<210> 1310
<211> 67
<212> PRT
<213> Homo sapiens

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<400> 1310
Ser Tyr Asn His Gly Thr Lys Asn Phe Ile Glu Ile Phe Lys His Leu
1 5 10 15

Ile Lys Leu Lys Leu Leu Phe Gln Met Phe Lys Phe Tyr His Pro Phe
20 25 30

Phe Ser His Glu Phe Leu Lys Asp Tyr Ala Leu Met Leu Xaa Ser Ile
35 40 45

Leu Leu Phe Leu Lys Ile Pro Gly Ile Phe Trp Tyr His Val Gln Pro
50 55 60

Thr Ser Leu
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<210> 1311
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1 5 10 15

Ser Ser Pro Thr Ser Ser Ala Gly Arg Gly Val Thr Gln Ala Thr Arg
20 25 30

Leu Ser Ser Leu Val His Ala Gly Thr Ala Ala Ala Gly Ala Ser Val
35 40 45

Pro Phe Ser Gly Leu Arg Val Leu Ser Lys Gly Gly His Thr Phe Trp
50 55 60

Gln Thr Phe Leu Lys Xaa Gly Ser Ser Asn Val Lys Phe His Leu Gly
65 70 75 80

Xaa His Leu Thr Met His Asn Arg Leu Ile Xaa Glu Met Asp Gly Val
85 90 95

Xaa Phe Gly

<210> 1312
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<212> PRT
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Gly Ile Xaa Val Gln Glu Gly Arg Gly Leu Ala Val Ala Glu Xaa His
1 5 10 15

Lys Lys Val Thr Arg Pro Gly Ala Ala Asp Xaa Ala Arg Arg Pro His
20 25 30

Leu Tyr

<210> 1313
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<212> PRT
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<400> 1313
Thr Val Val Arg Gln Val Ser Phe Thr Leu Leu Met Met Cys Cys Cys
1 5 10 15

His Gly Asn Pro Ala Gln Tyr Glu Arg Xaa Arg Ser Ser Asp Ile Gly
20 25 30

Val Cys Ala Gly Leu Arg Ser Gln Trp Gly Glu Thr Thr His Leu Trp
35 40 45

Gly Xaa
50

<210> 1314
<211> 54
<212> PRT
<213> Homo sapiens

<400> 1314
Thr Val Val Arg Gln Val Ser Phe Thr Leu Leu Met Met Cys Cys Cys
1 5 10 15

His Gly Asn Pro Ala Gln Tyr Glu Arg Asn Arg Ser Ser Asp Ile Trp
20 25 30

Cys Met Cys Leu Ala Glu Glu Pro Met Gly Arg Thr Thr Ile Cys Gly
35 40 45

Ile Met Thr Glu Arg Leu
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<210> 1315
<211> 84
<212> PRT
<213> Homo sapiens

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1 5 10 15

Thr Thr His Leu Pro Asn Gln Leu Ala Leu Lys Met Asp Gly Ala Gly
20 25 30

Ala Ser Gly Pro Tyr Pro Ala Val Ala Gly Ser Arg Glu Trp Thr Gly
35 40 45

Ala Ala Gly Ala Ala Arg Ala Arg Ala Val Leu Val Phe Ala Xaa Phe
50 55 60

Pro Val Gly Lys Arg Pro Asn Pro Leu Pro Xaa Trp Phe Leu Xaa Pro
65 70 75 80

Gln Xaa Xaa Thr

<210> 1316
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<400> 1316
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1 5 10 15

Gly Leu Leu Xaa Ser Leu Gln Tyr Phe Glu Phe Ile Phe Leu Pro Ile
20 25 30

Tyr Val Leu Tyr Ala Ala Gly Ala Pro Leu Lys Phe Tyr Ser Val Leu
35 40 45

Gln Lys Lys Lys Lys Lys Lys Lys Lys Arg Gly Ala Pro Xaa Lys Gly
50 55 60

Pro Xaa Phe Xaa
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<210> 1317
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<400> 1317
Ile Xaa Xaa Pro Xaa Gly Gly Pro Lys Pro Pro Pro Phe Xaa Lys Xaa
1 5 10 15

Phe Ser Pro Pro Pro Pro Pro Arg Asn Pro Pro Xaa Phe Phe Ser Pro
20 25 30

Pro Pro Xaa Asp Pro Xaa Pro Xaa Lys Lys Phe Phe Phe Phe Leu Lys
35 40 45

Thr Pro Pro
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<210> 1318
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<400> 1318
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Asp Phe Asn Leu His Gln Pro Leu Lys Cys Arg Pro Leu Cys Asp Trp
  1               5                  10                  15

Xaa Tyr Ala Leu Leu Lys Cys His Lys Ala Ala Ser His Leu Trp Gly
             20                  25                  30

Tyr Cys Tyr Lys Phe Phe Leu Ser Leu Lys Xaa Pro Phe Leu Leu Ser
         35                  40                  45

Ser Val Gly Lys Phe Xaa Gln Ile Ser Ser Ser Xaa Pro Gly Arg Asn
     50                  55                  60

His Ser Pro Gln Gly Asn Leu Pro Xaa Leu Phe Leu Gly Cys
 65                  70                  75
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<210> 1319
<211> 28
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<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1319
His Leu Asp Val Pro Ser Cys Leu Leu Lys Lys Lys Lys Lys Thr Arg
1 5 10 15

Xaa Gly Ala Arg Tyr Pro Xaa Pro Pro Asn Ser Xaa
20 25

<210> 1320
<211> 27
<212> PRT
<213> Homo sapiens

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<400> 1320
Gly Lys His Gly Lys Gly Ser Gly Lys Trp Ala Cys Xaa Xaa Leu Gly
1 5 10 15

Arg Xaa Xaa Leu Xaa Pro Ala Leu Met Val Thr
20 25

<210> 1321

<211> 71
<212> PRT
<213> Homo sapiens

<400> 1321
Gln Ser Pro Ile His Phe Ser Cys Thr Arg Met Leu Trp Lys Ser Leu
1 5 10 15

Met Thr Arg Thr Val Phe Ser Leu His Cys Leu Ala Leu Gly Phe Glu
20 25 30

Lys Lys Ile Arg Glu Gly Arg Ser Gly Ile Ser Trp Pro Lys Phe Pro
35 40 45

Leu Gly Arg Thr Gly Arg Cys Cys Ser Ser Lys Arg Glu Gly Phe Phe
50 55 60

Gln Ser His Leu Pro Glu Ser
65 70

<210> 1322
<211> 80
<212> PRT
<213> Homo sapiens

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<400> 1322

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Gly Gly Ser Thr Ser Ser Leu Lys Ile Leu Glu Gly Met Glu Glu Ser
  1               5                  10                  15

Gln His Val Phe Leu Thr Gln Asp Pro Trp Phe Val Leu Lys Ala Xaa
             20                  25                  30

Asn Pro Gln Val Pro Ala Phe Asp Asp Val Tyr Arg Lys Cys Trp Leu
         35                  40                  45

Thr Glu His Ile Cys Pro Ile Pro Gly Val Xaa Arg Lys Pro Xaa Ile
     50                  55                  60

Phe Xaa Ile Pro Asn Phe Phe Leu Xaa Xaa Lys Lys Lys Met Xaa Xaa
 65                  70                  75                  80
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<210> 1323
<211> 57
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<213> Homo sapiens

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<222> (30)
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<400> 1323
Gln Gly Leu Asn Pro Tyr Thr Phe Trp His Asn Xaa Ile Xaa Leu Gly
1 5 10 15

Asn Glu Leu Cys Lys Gly Glu Pro Lys Leu Lys Thr Pro Xaa Asn Gln
20 25 30

Thr Glu Leu Thr Leu Arg Asn Ser Leu Lys Glu Ala His Pro Ser Tyr
35 40 45

Val Gly Lys Ile Val Gly Lys Val Phe
50 55

<210> 1324
<211> 31
<212> PRT
<213> Homo sapiens

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<400> 1324
Lys Arg Lys Leu Arg Glu Gly Arg Asn Leu Asn Xaa Leu Met Lys Ile
1 5 10 15

Met Leu Xaa Ile Ile Lys Thr Gly Tyr Glu Tyr Ser Asn Pro Phe
20 25 30

<210> 1325
<211> 40
<212> PRT
<213> Homo sapiens

<220>

<221> SITE
<222> (32)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1325
Leu Glu Ile Thr Leu Gln Gly Glu Pro Lys Leu Arg Pro Pro Lys Pro
1 5 10 15

Asp Glu Leu Pro Lys Lys Gln Leu Lys Glu His Thr Arg Leu Cys Xaa
20 25 30

Lys Ile Val Gly Arg Phe Ile Gly
35 40

<210> 1326
<211> 65
<212> PRT
<213> Homo sapiens

<220>
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<400> 1326
Ala Tyr Lys Lys Glu Lys Glu Gln Ser Gln Glu Arg Thr Xaa Xaa Lys
1 5 10 15

Cys Phe Gly Thr Ser Leu Phe Leu Asp Phe Glu Leu Ser Asn Trp Phe

                20   25   30

Ser Gln Val Lys Leu Lys Asn Ser Glu Thr Trp Phe Tyr Glu Ser Cys
        35   40   45

Ser Tyr Thr Phe Leu Xaa Xaa Gly Pro Xaa Leu Leu Pro Arg Leu Leu
    50   55   60

Thr
65

<210> 1327
<211> 48
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<400> 1327

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Trp Glu Lys Phe Ile Gly Xaa Lys Arg Gln Thr Tyr Glu Pro Gly Asp
  1               5                  10                  15

Thr Gly Cys Ser Gln Asn Xaa Ile Leu Val Ser Leu Leu Ile Leu Ala
             20                  25                  30

Xaa Glu Pro Pro Xaa Xaa Pro Trp Leu Ile Tyr Xaa Leu Val Pro Xaa
         35                  40                  45
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<210> 1328
<211> 72
<212> PRT
<213> Homo sapiens

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<400> 1328
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Leu Asp Gln Lys Lys Ser Xaa Leu Phe Asp Leu Xaa Arg Xaa Asn Leu
  1               5                  10                  15

Pro Xaa Leu Tyr Thr His Val Cys Val Ser Leu Lys Arg Xaa Val Arg
             20                  25                  30

Leu Xaa Lys Ile Leu Ile Val Ile Asn His Val Xaa Thr Ser Cys Asn
         35                  40                  45

Glu Leu His Asp Leu Ile Leu Ser Leu Leu Ala Xaa Thr Thr Xaa Tyr
     50                  55                  60

Phe Ser Asn Xaa Xaa Ile Ser Pro
 65                  70
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<210> 1329
<211> 19
<212> PRT
<213> Homo sapiens

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<220>
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<222> (19)
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<400> 1329
Thr Ile Xaa Cys Glu Leu Leu Lys Trp Ile Ile Gly His Gly Leu Xaa
  1   5   10   15

Ala Ala Xaa

<210> 1330
<211> 80
<212> PRT
<213> Homo sapiens

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<400> 1330
Pro Leu Tyr Leu Leu His Asn Glu Leu Thr Arg Asn Asn Phe Ala Arg
1 5 10 15

Arg Ala Lys Ala Lys Thr Pro Glu Xaa Arg Xaa Ala Thr Leu Glu Gln
20 25 30

Leu Lys Glu His Thr Arg Leu Cys Xaa Lys Ile Val Gly Xaa Ile Tyr
35 40 45

Xaa Leu Lys Arg Gln Thr Tyr Arg Pro Gly Asp Thr Gly Xaa Pro Xaa
50 55 60

Xaa Ile Leu Xaa His Phe Asn Leu Pro Xaa Asn Leu Leu Ile Pro Cys
65 70 75 80

<210> 1331
<211> 61
<212> PRT
<213> Homo sapiens

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<400> 1331
Ile Ile Asn Asn Asn Lys Asn Lys Ala Asn Thr Leu Asp Ile Thr Leu
1 5 10 15

Pro Ser Gly Ala Xaa Lys Lys Val Lys Ala Gly Ile Ser Phe Ser Tyr
20 25 30

Leu Asn Leu Ser Val Leu Ser Gln Gly Ile Phe Ser Glu Asn Arg Trp
35 40 45

Asn Xaa Val Arg Leu Trp Xaa Met Leu Ser Ile Ile Gly
50 55 60

<210> 1332
<211> 97
<212> PRT
<213> Homo sapiens

<220>
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<400> 1332
Lys Val Xaa Gly Leu Xaa Ser Pro Gly Pro Glu Ile Pro Gly Ser Thr
1 5 10 15

Xaa Thr Val Arg Ile Asn Thr Val Xaa Pro Leu Ile Tyr Leu Leu Leu
20 25 30

Ser Pro Ile Xaa Asn Thr His Ala Ala Xaa Leu Ser Val Asp Gly Gly
35 40 45

Tyr His Leu Asp Pro Leu Leu Leu Leu Glu Xaa Pro Xaa Xaa Leu Trp
50 55 60

Ala Leu Xaa Arg Lys Ser Arg Ile Ile Trp Lys Thr Leu Xaa Phe Ser
65 70 75 80

Ser Arg Leu Tyr Gln Lys Ile Pro Lys Thr Asp Xaa Ala Val Xaa Xaa
85 90 95

Gln

<210> 1333
<211> 94
<212> PRT
<213> Homo sapiens

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<400> 1333
Xaa Phe Leu Pro Pro Ser Ala Arg Pro Arg Ala Gly Arg Arg Xaa Pro
1   5   10   15

Leu Arg Gly Gln Cys Gln Val Gly Ser Leu Thr Gly Ala Val His Leu
            20   25   30

Ser Asn Gly Asn Ala Xaa Val Leu Arg Xaa Ala Gln Gly Gly Gln Lys
        35   40   45

Pro Pro Val Glu Xaa Lys Gly Lys Ser Ser Leu Asp Leu Asp Phe Gln
    50   55   60

Tyr Glu Tyr Lys Thr Val Lys Ala Gly Pro His Asp Pro Ser Asp Leu
65   70   75   80

Leu Gly Phe Lys Gln Glu Val Xaa Glu Lys Leu Pro Gln Gly
                85   90

<210> 1334
<211> 55
<212> PRT
<213> Homo sapiens

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<400> 1334
Thr Cys Gly Pro Pro Val Lys Tyr His Xaa Ser Asp Arg Phe Phe Thr
1 5 10 15

Asp Pro Val Arg Arg Gly Gly Glu Pro Arg Gly Ala Leu Ala Ser Gly
20 25 30

Ala Lys Arg Pro Ala Ala Arg Arg Pro Gly Ala Thr Arg Ser Gly Asp
35 40 45

Xaa Ala Arg Xaa Gly Xaa Xaa
50 55

<210> 1335
<211> 143
<212> PRT
<213> Homo sapiens

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<400> 1335
Xaa Thr Ile Val Leu Xaa Xaa Thr Pro Ala Gly Thr Gly Pro Glu Phe
1   5   10   15

Pro Gly Arg Pro Thr Arg Pro Pro Ile Phe Pro Val Asp Asn Ala Ile
            20   25   30

Asp Asn Gly Xaa Glu Xaa Gln Val Ala Leu Pro Ile Leu Met Ala Ala
        35   40   45

Tyr Ala Met Ala Glu Ala Phe Met Ser Thr Gly Val Gly Ala Ser Leu
    50   55   60

Ile Leu Ile Ala Leu Lys Val Gly Ile Thr Ala Lys Thr Val Ala Val
65   70   75   80

Ile Gly Ala Ile Val Thr Ser Ile Leu Ser Ile Ala Thr Gly Thr Ser
                85   90   95

Trp Gly Thr Phe Ala Ala Cys Ala Pro Ile Phe Leu Trp Leu Asn His
            100   105   110

Ile Val Gly Gly Asn Ile Leu Phe Asp Asn Lys Gln Leu Leu Xaa Xaa
        115   120   125

Glu His Val Leu Glu Asp Asn Ile Gly Leu Phe Gln Ile Leu Gln
    130   135   140

<210> 1336
<211> 65
<212> PRT
<213> Homo sapiens

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<400> 1336
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1 5 10 15

Arg Arg Thr Pro Ser Arg Glu Ser Arg Xaa Pro Pro Ala Pro Leu Tyr
20 25 30

Ser Ala Arg Ala Gln His Gly Ala Pro Ala Gly Xaa His Val Arg Ala
35 40 45

Ser Asp Cys Arg Gly Asp Xaa Asp Phe Xaa Arg Ser Ser Gly Arg Met
50 55 60

Glu
65

<210> 1337
<211> 42
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<213> Homo sapiens

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<400> 1337
Thr Xaa Ala His Ser Val Xaa Xaa Pro His Ser Xaa Gly His Cys Gly
1 5 10 15

Gln Arg Val Leu Ala Cys Xaa Leu Leu Ser Ile Leu Lys Ala Met Asp
20 25 30

Phe Xaa Gly Pro Phe Ser Ser Xaa Leu Pro
35 40

<210> 1338
<211> 35

<212> PRT
<213> Homo sapiens

<220>
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<400> 1338
Phe Asn Lys Leu Ser Ser Ala Leu Ser Glu Phe Ser Gly Pro Asn Ile
1 5 10 15

Tyr Val Glu Lys Asp Gly Gly Val Xaa His Leu Cys Thr Asp His Leu
20 25 30

Tyr Val Arg
35

<210> 1339
<211> 79
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1339

Asp Ile Glu Ala Lys Pro Ser His Tyr Gln Leu Val Ser Gly Ser Ser
1   5   10   15

Thr Glu Asp Ser Leu His Val His Ala Gln Met Ala Glu Asn Glu Xaa
            20   25   30

Xaa Gly Ser Gly Gly Gly Gly Ser Glu Glu Asp Pro Pro Cys Xaa His
        35   40   45

Gln Ser Cys Glu Gln Lys Asp Cys Leu Ala Xaa Lys Pro Trp Asp Ile
    50   55   60

Ser Leu Ala Xaa Pro Glu Ser Ile Arg Ser Asp Leu Glu Ser Ser
65   70   75

<210> 1340
<211> 69
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<400> 1340
Gly Lys Gly Thr Phe Pro Lys Asn Xaa Phe Trp Gly Asn Lys Asn Val
1   5   10   15

Asp Cys Glu Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
20 25 30

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
35 40 45

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Xaa Gly Gly Pro Phe
50 55 60

Xaa Lys Xaa Lys Xaa
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<210> 1341
<211> 70
<212> PRT
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<400> 1341
Xaa Trp Ser Xaa Leu Ala Ala Gln Lys Glu Gln Ser Gly Leu Glu Gly
1 5 10 15

Ser Ile Lys Phe Tyr Thr His Lys Leu Gln Leu Glu Val Ser Phe Leu
20 25 30

Lys Cys Pro Ala Phe Ala Gln Leu Phe Gln Ile Ile Ser Phe Leu Arg
35 40 45

Leu Trp Gln Val Ser Cys Pro Pro Ser Tyr Ser Ser Val Phe Thr Xaa
50 55 60

Ser Arg Gln Xaa Ser Gly
65 70

<210> 1342
<211> 121
<212> PRT
<213> Homo sapiens

<220>
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<222> (95)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1342
Glu Pro Asp Pro Asn Ser Glu Asn Ile Ala Ala Ile Ser Gln Ser Ser
1 5 10 15

Val Gly Ser Asp Leu Phe Val Phe Lys Pro Ser Glu Pro Arg Pro Leu
20 25 30

Tyr Ile Gln Lys Gly Ile Ser Arg Glu Lys Val Gln Trp Gly Val Phe
35 40 45

Val Pro Arg Asp Val Pro Glu Ser Phe Thr Ser Glu Ala Tyr Gln Trp
50 55 60

Leu Asn Arg Ser Gln Phe Tyr Phe Leu Thr Lys Ser Gln Ser Leu Leu
65 70 75 80

Thr Phe Ser Thr Lys Ser Pro Glu Glu Lys Leu Thr Pro Thr Xaa Gln
85 90 95

Thr Ala Ala Ser Arg Arg Lys Ser Ser His Asn Pro Ile Leu Phe His
100 105 110

Ile Gly Lys Thr Gln Ala Thr Ala Gly
115 120

<210> 1343
<211> 36
<212> PRT
<213> Homo sapiens

<400> 1343
Asn Thr Lys Gly Asp Arg Glu Glu Leu Lys Asp Leu Gln Tyr Cys Thr
1 5 10 15

Gln Lys Leu Ile Ile Leu Cys Thr Phe Tyr Leu Phe Trp Arg Phe Tyr
20 25 30

Met Ile Phe Asn
35

<210> 1344
<211> 32
<212> PRT
<213> Homo sapiens

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<222> (32)
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<400> 1344
Ala Val Ala Val Ser Gly Pro Gly Pro Val Gly Val Leu Leu Xaa Leu
1 5 10 15

Trp Leu Thr Pro Xaa Pro Gly Thr Leu Asn Asp Arg Ser Arg Xaa Xaa
20 25 30

<210> 1345
<211> 63
<212> PRT
<213> Homo sapiens

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<222> (61)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1345
His Leu Val Lys Ala Gly Arg Lys Ile Asn Asn Thr Lys Leu Cys Tyr
1 5 10 15

Leu Ile Xaa Leu Leu Glu Arg Val Arg Phe Thr Xaa Tyr Ile Phe Lys
20 25 30

Leu Ile His Val Lys Asn Asp Ser Asp Phe Asp Val Ile Xaa Leu Leu
35 40 45

Ile Glu Ser Xaa Ile Xaa Lys Ala Asn Asn Leu Lys Xaa Ala Ile
50 55 60

<210> 1346
<211> 64
<212> PRT
<213> Homo sapiens

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<220>
<221> SITE
<222> (64)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1346
Ala Gly Ala Asp Arg Gly Gly Gly Gly Trp Xaa Arg Leu Gly Xaa Ile
1 5 10 15

Asn Leu Leu Ile Asp Cys Asp Ser Lys Lys Lys Lys Lys Lys Lys Lys
20 25 30

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
35 40 45

Lys Xaa Lys Xaa Lys Lys Lys Lys Xaa Lys Lys Lys Lys Lys Xaa Xaa
50 55 60

<210> 1347
<211> 45
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (33)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (42)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1347
Phe Leu Ile Met Ser Asn Asp Cys Lys Ser Ala Trp Ile Phe Thr Cys
1 5 10 15

Lys Gly Tyr Ser Cys Ile Val Arg Ser Pro Ser Pro Ala Glu Ser Ser
20 25 30

Xaa His Trp Leu Ala Val Cys Cys Val Xaa His Ser Phe
35 40 45

<210> 1348
<211> 59
<212> PRT
<213> Homo sapiens

<220>
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<222> (53)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1348
Gly Phe Leu Val Leu Met Leu Val Lys Val Cys Ala Gly Ile Ser Lys
1 5 10 15

Ser Leu Lys Lys Val Phe Thr Gly His Trp Ala Val Val Arg Glu Gly
20 25 30

Leu Thr Asn Pro Trp Ile Pro Asp Asn Trp Ser Trp Gly Gly Val Ala
35 40 45

Ser Glu His Cys Xaa Cys Tyr Arg Val Leu His
50 55

<210> 1349
<211> 63
<212> PRT
<213> Homo sapiens

<400> 1349
Phe Cys Pro Cys Val Arg Gln Ser Glu Gln Arg Val Ile Gln Ser Ala
1 5 10 15

Ala Asn Lys Ala Ala Asp Ser Ser Val Gln Lys Ala Lys Lys Glu Leu
20 25 30

Tyr Val Arg His Leu Phe Leu Leu Ile Ser Ile Phe Leu Leu Thr His
35 40 45

Thr Leu Ser His Val Lys Arg Lys Ile Asn Lys Trp Ser Glu Leu
50 55 60

<210> 1350
<211> 38
<212> PRT
<213> Homo sapiens

<220>
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<222> (30)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1350
Tyr Ile Tyr Tyr Arg Pro Asn Glu Leu Asn Ile Ala Leu Leu Tyr Ser
1 5 10 15

Pro Lys Gly Leu Asn Ser Cys Phe Phe Pro Ser Phe Ile Xaa Arg Lys
20 25 30

His Tyr Asp Arg Ile Ser
35

<210> 1351
<211> 77
<212> PRT
<213> Homo sapiens

<220>
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<222> (12)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1351
Leu Leu Pro Glu Asp Gln Val Gln Leu Gln Pro Xaa Gly Arg Trp Leu
1   5   10   15

Pro Thr Ser Ser Pro Gly Leu Ser Ser Ser Pro Ser Ser Pro Val Ile
            20   25   30

Leu Cys Cys Leu Asp Ser Thr Ile Pro Ser Leu Phe Leu Leu His Leu
        35   40   45

Leu Pro Leu Glu Pro Pro Leu Pro Ser Trp Asp Phe Trp Glu Val Pro
    50   55   60

Ala Xaa Gln Pro Arg His Lys Thr Ile Met Val Thr Trp
65   70   75

<210> 1352
<211> 28
<212> PRT
<213> Homo sapiens

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1352

Xaa Leu Leu Arg Asp Xaa Met Gly His Tyr Val Trp Leu Phe Tyr Ile
1   5   10   15

Lys Pro Thr Thr Xaa Phe Arg Val Gly Xaa Met Asn
            20   25

<210> 1353
<211> 79
<212> PRT
<213> Homo sapiens

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1353
Pro Arg Leu Gln Thr Leu Asn Leu Val Leu Xaa Ser Ala Asp Asn Gly
1 5 10 15

Xaa Xaa Pro Arg Leu Tyr Asn Arg Arg Ser Ala Lys Asp Xaa Gly Val
20 25 30

Leu Gly Gly Xaa Leu Val Phe Pro Lys Val Phe Gln Ile Lys Val Val
35 40 45

Phe Val Leu Lys Lys Lys Lys Lys Lys Lys Leu Gly Gly Xaa Phe Leu
50 55 60

Gly Gly Ala Arg Gly Xaa His Gly Phe Xaa Gln Xaa Gly Xaa Gly
65 70 75

<210> 1354
<211> 40
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1354
Gly Asp Pro Ala Gln Phe Pro Gly Arg Pro Arg Val Arg Thr Ile Gly
1 5 10 15

Arg Arg Ser Phe Xaa Xaa Trp Xaa Asn Ser His Phe Pro His Glu Glu
20 25 30

Xaa Lys Xaa Gly Gln Lys Pro Asn
35 40

<210> 1355
<211> 40
<212> PRT
<213> Homo sapiens

<220>
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<400> 1355
Asp Ile Asn Gly Asp Phe Lys Val Glu Ile Asn Met Tyr Ser Met Phe
1 5 10 15

Leu Lys Lys Lys Lys Lys Lys Lys Xaa Pro Gly Gly Ala Pro Val Pro
20 25 30

Ile Xaa Pro Xaa Gly Gly Pro Phe
35 40

<210> 1356
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<400> 1356
Pro Gly Glu Ala Gly Gly Arg Ala Pro Arg Gly Ser Arg Phe Trp Arg
1 5 10 15

Gln Xaa Pro Gly Arg Ala Pro Ala Gly Arg Asp Pro Leu Arg Gly Gln
20 25 30

Cys Gln Val Gly Ser Leu Thr Gly Ala Val His Leu Ser Asn Gly Asn
35 40 45

Ala Gly Val Leu Arg Arg Ala Gln Gly Gly Gln Lys Pro Pro Val Glu
50 55 60

Gln Lys Gly Lys Ser Ser Leu Asp Leu Asp Phe Gln Tyr Glu Tyr Arg
65 70 75 80

Pro

<210> 1357
<211> 73
<212> PRT
<213> Homo sapiens

<220>
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<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (42)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1357
Thr Pro Leu Ser Gln Asn Pro Ala Gln Ala Glu Arg Tyr Gly Ser Ala

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1               5                   10                  15

Ala Glu Pro Arg Leu Ala Ser Asp Ser Arg Ser Pro Ala Cys Pro Arg
            20                  25                  30

Arg Arg Ala Ala Pro Xaa Ser Thr Arg Xaa Ala Arg Ala Gly Gly Arg
        35                  40                  45

Val Pro Arg Arg Ala Pro Gly Pro Gly Ser Gly Ala Glu Cys Pro Ser
    50                  55                  60

Ser Trp Glu Thr Gly Arg Gly Arg Lys
 65                 70
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<210> 1358
<211> 66
<212> PRT
<213> Homo sapiens

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<221> SITE
<222> (62)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1358
Gly Xaa Arg Pro Arg Xaa Trp Ile Arg Thr Ser Arg Trp Cys Ser Arg
1 5 10 15

Tyr Lys Xaa Phe Val Cys Ser Thr Ile Lys Val Leu Arg Asp Leu Asn
20 25 30

Ser Xaa Arg Ser Asn Pro Gly Arg Phe Leu Ser Thr Ser Asn Ser Ser
35 40 45

Leu Tyr Xaa Arg Thr Xaa Arg Tyr Lys Ala Tyr Phe Ser Xaa Arg Leu
50 55 60

Pro Pro
65

<210> 1359
<211> 73
<212> PRT
<213> Homo sapiens

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1359
Arg Pro Lys Trp Arg Arg Val Pro Cys Glu Gln Gln Leu Asn Met Gly
1 5 10 15

Gln Ser Val Leu Arg Asp Gly Arg Ala Pro Phe Arg Arg Asp Gly Arg
20 25 30

Trp Pro Pro Leu Pro Ser Ala Asp Arg Lys Gly Val Gly Phe Arg Ser

35 40 45

Pro Asn Pro Glu Trp Arg Arg Trp Arg Arg Glu Ala Ser Xaa Arg Xaa
50 55 60

Arg Asp Arg Ser Arg Arg Ser Pro Xaa
65 70

<210> 1360
<211> 38
<212> PRT
<213> Homo sapiens

<220>
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<222> (21)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1360
Thr Arg Pro Val Asn Asn Lys Lys Gly Val Ile Arg Ile Gly Met Trp
1 5 10 15

Ile Phe Thr Val Xaa Thr Thr His Leu Gln Phe Cys Asn Ala Arg Met
20 25 30

Gln Phe Lys Asn Val Lys
35

<210> 1361
<211> 54
<212> PRT
<213> Homo sapiens

<400> 1361
Arg Tyr Ala Cys Arg Tyr Arg Ser Gly Ile Pro Gly Ser Thr His Ala
1 5 10 15

Ser Ala Asp Ala Trp Gly Leu Leu Arg Asn Ile Ala Glu Val Ile Thr
20 25 30

Thr Ala Ile Lys Leu Phe Lys Lys Asp Leu Tyr Asn Val Tyr Lys Ser
35 40 45

Gly Ile Lys Asp Phe Ser
50

<210> 1362
<211> 139
<212> PRT
<213> Homo sapiens

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1362
Ser Phe Asp Val Gly Ser Ser Tyr His Cys Glu Ala Glu Phe Thr Lys
1 5 10 15

Arg Trp Ile Val His Pro His Glu Pro Cys Ala Phe Gly Val Asn Asn

20 25 30

Val Gln Phe Val Asp Val Ile Glu Ser Arg Gly Leu Ser Pro Phe Tyr
35 40 45

Ile Cys Ile Asn Phe Asn Leu Leu Lys Xaa Lys Lys Glu Xaa Glu Lys
50 55 60

Gln Phe Ile Lys Xaa Xaa Lys Ser Asn Gln Pro Gln Gln Gln Lys Arg
65 70 75 80

Met Val Trp Tyr Trp Arg Arg Asp Gly Gln Leu Ser Leu Leu Ala His
85 90 95

Asp Gly Met Asp Leu Gly Pro Gly Thr Thr Phe Ile Leu Arg Xaa Xaa
100 105 110

Leu Trp Ile Pro Arg Glu Gly Gln Pro Phe Arg Xaa Gly Leu Tyr Pro
115 120 125

Glu Gly Gly Thr Glu Phe Gly Gln Thr Xaa His
130 135

<210> 1363
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (11)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (56)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1363
Ala Phe Arg Lys Tyr Tyr Val Lys Asn Leu Xaa Ser Leu His Ala Arg
1 5 10 15

His Ser Phe Asn His Phe Ser Asp His Phe Ser Lys Ile Leu Lys His
20 25 30

Pro His Leu Gly Phe Ser Leu Asn Leu Gly Val Pro Ser Pro His Pro
35 40 45

Ala Ala Phe Cys Val Arg Gly Xaa Arg Ser

50 55

<210> 1364
<211> 21
<212> PRT
<213> Homo sapiens

<220>
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<222> (16)
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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (19)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1364
Pro Tyr Ser Glu Ser Tyr Tyr Asn Ser Leu Ala Val Val Leu Gln Xaa
1 5 10 15

Arg Xaa Xaa Glu Asn
20

<210> 1365
<211> 69
<212> PRT
<213> Homo sapiens

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<400> 1365
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Tyr Thr Ala Ile Met Ser Ile Met Ser Tyr Asn Xaa Gly Ala Val Met
  1               5                  10                  15

Ala Met Lys Gly Xaa Xaa Xaa Xaa Xaa Xaa His Arg Cys Arg Xaa Ala
             20                  25                  30

Leu Xaa Glu Ser Arg Pro Arg Met Val Asn His Gly Thr Xaa Arg Lys
         35                  40                  45

Ile Phe Xaa His Gly Xaa Asn Arg Leu Xaa Met Gly Leu Gly Arg Xaa
     50                  55                  60

Xaa Gln Leu Arg Xaa
 65
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<210> 1366
<211> 42
<212> PRT
<213> Homo sapiens

<220>
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<221> SITE

<222> (34)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1366
Leu Ala Ile Leu Arg Leu Phe Lys Val Phe Ser Asn Ile Lys Lys Tyr
1 5 10 15

His Gln Arg Ser Pro Ala Met Leu Lys Thr Asn Asn Xaa Lys Gln Thr
20 25 30

Xaa Xaa Lys Asn Leu Lys Lys Lys Xaa Gly
35 40

<210> 1367
<211> 24
<212> PRT
<213> Homo sapiens

<220>
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<222> (16)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1367
Ser Thr Leu Ser Asn Arg Leu Val Trp Val His Trp His Ser Leu Xaa
1 5 10 15

Tyr Cys Leu Ile Ala Asp Thr Xaa
20

<210> 1368
<211> 79
<212> PRT
<213> Homo sapiens

<220>
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<221> SITE
<222> (78)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1368
Xaa His Xaa Trp Lys Leu Ile Leu Xaa Leu Xaa Leu Gly Tyr Phe Xaa
1   5   10   15

Phe Gly Gly Glu Ser Ala Xaa Phe Phe Arg Arg Gly Pro Gly Phe Phe
            20   25   30

Lys Gly Lys Lys His Ser Tyr Ser Lys Leu Gln Asn Asn Gly Val Asn

35 40 45

Met Leu Asn Arg Ser Ile Arg Lys Pro Asn Thr Gly Leu Ser Arg Arg
50 55 60

Xaa Leu Val Xaa Arg Ala Leu Gly Lys Asn Lys Gly Lys Xaa Lys
65 70 75

<210> 1369
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<400> 1369
Asn Gln Arg Gln Leu Ser Cys Cys Val Ser Ser Cys Trp Ile Leu Ser
1 5 10 15

Leu Gly Pro Thr Val Cys Gln Tyr Ser Cys Glu Leu Tyr Val Pro Pro
20 25 30

Val Leu His Thr Gln Val Cys Val Ser Val Tyr Ala Cys Phe Lys Gln
35 40 45

Thr Leu Asn Val His Met Tyr Ile Ile Tyr Thr Tyr Leu Tyr His Ile
50 55 60

Ser Ser Phe Ile Thr Ile Asp Tyr Thr Asn Trp Xaa
65 70 75

<210> 1370
<211> 50
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> SITE
<222> (49)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1370
Ala Arg Ala Tyr Leu Leu Val Ala Ser Asn Leu Thr Pro Ser Leu Ser
1   5   10   15

Glu Tyr Val Gln Pro Lys Arg Thr Asn Trp Leu Leu Cys Thr Ser Leu
            20   25   30

Xaa Ile Xaa Leu Leu Ser Met Val Leu Arg Ser Xaa Thr Val Tyr Leu
        35   40   45

Xaa Leu
    50

<210> 1371
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> SITE
<222> (76)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1371
Glu Lys Thr Phe Val Glu Arg Val Lys Asn Leu Thr Pro His Ser Arg
1 5 10 15

Pro Lys Ser Xaa His Gln Leu Lys Lys Ala Phe Lys Leu Gln His Pro
20 25 30

Leu Pro Lys Lys Phe Gln Thr Tyr Asn Trp Asn Phe Leu Xaa Pro Asn
35 40 45

Trp Asp Gln Phe Xaa Thr Pro Ile Arg Lys Lys Leu Met Val Ser Xaa
50 55 60

Xaa Val Thr Xaa Glu Lys His Phe Ser Phe Arg Xaa
65 70 75

<210> 1372
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1372
Ile Cys Pro Gln Asn Pro Leu Asn Pro Leu Val Asn Leu Thr Val Ser
1 5 10 15

Pro Lys Arg Asn Ser Ser Leu Asp Thr Arg Lys Lys Pro Cys Arg Glu
20 25 30

Ser Lys Lys Phe Asn Thr His Ser Arg Pro Lys Ser Ser His Gln Leu
35 40 45

Arg Lys Arg Ser Ser Ser Thr Pro Thr Thr
50 55

<210> 1373
<211> 52
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (20)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1373
Ser Leu Asp Leu Ile Cys Pro Tyr Glu Arg Pro Gly Lys Asn Arg Leu
1 5 10 15

Xaa Ala Pro Xaa Leu Val Glu Leu Cys Pro Ser Ser Asp Ala Cys Gln
20 25 30

Glu Arg Val Glu Pro Arg Thr Leu Thr Lys Gly Gly Pro Gly Tyr Pro
35 40 45

Ile Ala Ala Leu
50

<210> 1374
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (93)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (108)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (113)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1374
Ala Arg Ala Glu Asp Pro His Ile Asp Glu Ser Lys Ala Xaa His Gln
1 5 10 15

Ala Ile Ile Met Ser Thr Ser Leu Arg Val Ser Pro Ser Ile His Gly
20 25 30

Tyr His Phe Asp Thr Ala Ser Arg Lys Lys Ala Val Gly Asn Ile Phe
35 40 45

Glu Asn Thr Asp Gln Glu Ser Leu Glu Arg Leu Phe Arg Asn Ser Gly
50 55 60

Asp Lys Lys Ala Glu Glu Arg Ala Lys Ile Ile Phe Ala Ile Asp Gln
65 70 75 80

Asp Val Glu Glu Lys Thr Arg Ala Leu Met Ala Leu Xaa Glu Glu Asp
85 90 95

Lys Arg Gln Ala Phe Pro Phe Leu Lys Leu Arg Xaa Phe Ser Phe Lys
100 105 110

Xaa His

<210> 1375
<211> 105
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (76)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (87)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (94)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (102)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1375
Ala Arg Gln Asp Thr Gln Glu Glu Arg Ala Ala Pro Gly Ser Arg Pro
1 5 10 15

Gly Leu His Ala Glu Ala Gly Gly Arg Arg Cys Pro Ala Glu Ser Pro
20 25 30

Glu Leu Arg Arg Pro Ala Leu Val Pro Ala Pro Ser Gly Arg Arg Phe
35 40 45

Glu Ser Asp Trp Cys Leu Ala Ala Ser Ser Ser Val Arg Asp His Glu
50 55 60

Val Leu Pro Ser Val Val Leu Lys Leu Phe Leu Xaa Ser Phe Ser Ser
65 70 75 80

Ala Leu Val Thr Gly Glu Xaa Pro Gly Asn Gly Phe Arg Xaa Arg Leu
85 90 95

Thr Ala Gly Asn Lys Xaa Thr Gly Thr
100 105

<210> 1376
<211> 25
<212> PRT
<213> Homo sapiens

<220>
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<222> (15)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (20)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1376
Arg Pro Thr Arg Pro Pro Thr Arg Pro Val Xaa Ser Ile Pro Xaa Leu
1 5 10 15

Trp Ala Ala Xaa Val Ser Pro Pro Lys
20 25

<210> 1377
<211> 38
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (3)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1377
Phe Thr Xaa Asn Ser Leu Tyr Phe Ser Cys Ile Lys Thr Leu Cys Cys
1 5 10 15

Ser His Ser Trp Ser Xaa Ser Pro Leu His Gly Asp Cys Gly Val Gly
20 25 30

Leu Asp Glu Val Gly Gln
35

<210> 1378
<211> 46
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<221> SITE
<222> (45)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (46)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1378
Phe Xaa Lys Arg Gly Pro Ser Ser Pro Val Ala Xaa Val Leu Glu Leu
1 5 10 15

Leu Asp Pro Pro Gly Cys Xaa Asn Ser Ala Arg Glu Gly Xaa Val Gly
20 25 30

Arg Ala Arg Arg Phe Pro Ala Xaa Val Ser Ala Arg Xaa Xaa
35 40 45

<210> 1379
<211> 34
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (6)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (29)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1379
Leu Leu Lys Xaa Thr Xaa Ser Cys Ser Tyr Pro Pro Leu Xaa Ala Glu
1 5 10 15

Pro Cys Leu Ile Gln Gln Pro Gly Gly Thr Thr Arg Xaa Pro Ser Leu
20 25 30

Thr Leu

<210> 1380
<211> 26
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (15)
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<222> (21)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (24)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1380
His Arg His Ala His Lys Glu Arg Leu Lys Lys Lys Lys Lys Xaa Ser

1 5 10 15

Arg Gly Xaa Pro Xaa Thr Lys Xaa Ala Pro
20 25

<210> 1381
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (44)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (46)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (120)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1381
Asp Ala Glu Gly Arg Pro Glu Gly Arg Leu Phe Gly Met Thr Gly Ala
1 5 10 15

Gly Leu Gly Arg Asp Ser Gly Arg Trp Arg Glu Val Ser Phe Phe Gly
20 25 30

Glu Thr Glu Arg Ala Arg Gly Gly Thr Val Gly Xaa Arg Xaa His Ser
35 40 45

Val Ala Ala Ala Gly Val Arg Asp Ser Pro Pro Ile Ser Cys Ser Leu
50 55 60

Gly Pro Trp Gly Arg Ser Gly His Arg Ser Asp Cys His Ala Asp Gly
65 70 75 80

Asp His Arg Arg Glu Leu Gly Gly Arg Lys Ala Pro Pro Pro Ala Gly
85 90 95

Arg Gly Pro Leu Thr Thr Ser Arg Leu Pro Val Pro Leu Leu Lys Ser
100 105 110

Asn Cys Cys Pro Phe Glu Ala Xaa
115 120

<210> 1382
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1382
Phe Lys Cys Ser Ile Leu Met Pro Xaa Asn Lys Ser Phe Gly Asn Thr
1 5 10 15

Asn Trp Ser Ile Ile Gly Asn Ala Gly Met Phe Arg Leu Ser Gln Gln
20 25 30

Cys Phe Ala Phe Leu Cys Leu Phe Ser Val Asn Thr Asn Glu Val Asn
35 40 45

Ile Ala
50

<210> 1383
<211> 92
<212> PRT
<213> Homo sapiens

<400> 1383
Gln Ser Ala Ala Leu Pro Pro Val Thr Leu Ala Leu Leu Cys Leu Asp
1 5 10 15

Gly Val Phe Leu Ser Ser Ala Glu Asn Asp Phe Val His Arg Ile Gln
20 25 30

Glu Val Glu Glu Asp Gly Pro Ser Ser Cys Ser Glu Asp Asp Tyr Ser
35 40 45

Glu Leu Leu Gln Glu Ile Thr Asp Asn Leu Thr Arg Lys Glu Ile Gln
50 55 60

Ile Glu Lys Ile His Leu Asp Thr Ser Ser Phe Met Glu Glu Leu Pro
65 70 75 80

Gly Glu Lys Asp Leu Ala His Val Val Glu Ile Leu
85 90

<210> 1384
<211> 106
<212> PRT
<213> Homo sapiens

<220>
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<222> (56)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (105)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1384
Asn Pro Ser Ala His Pro Ser Ile His Pro Ser Val Arg Pro Ser Met
1 5 10 15

Ser Pro Val Asp Arg Pro Ala Pro Leu Ala Gly Trp Val His Pro Pro
20 25 30

Ser Thr Trp Leu Thr Cys His Gly Arg Leu Cys Pro Ala Ser Asn Pro
35 40 45

Ile Leu Asn Ser Pro Lys Ala Xaa Gly Ala Val Gln Thr Gly Val Pro
50 55 60

Ser Ile Phe Ser Pro Thr Gly Val Phe Pro His Ala Val Xaa Tyr Asn
65 70 75 80

Pro His Ser Phe Leu Gly Pro Met Asn Phe Arg Ala Val Pro Phe Xaa
85 90 95

```
Pro Gly His Leu Leu Cys Xaa Leu Xaa Lys
            100                 105
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<210> 1385
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
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<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (51)
<223> Xaa equals any of the naturally occurring L-amino acids

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<220>
<221> SITE
<222> (64)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1385
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Ile Gln Gly Leu Xaa Xaa Xaa Gly Ser Ser Leu Pro Ser Pro Ser Thr
  1               5                  10                  15

Arg Xaa Ser Leu Thr Xaa Ala Thr Gly Xaa Leu Xaa Arg Gly Phe Arg
             20                  25                  30

Ser Leu Xaa Gly Trp Val Pro Gly Asn Gly Xaa Arg Ser Xaa Leu Gly
         35                  40                  45

Ala Pro Xaa Gly Cys Pro Met Gly Xaa Leu Xaa Xaa Phe Arg Gly Xaa
     50                  55                  60

Trp Gly
 65
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<210> 1386
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (13)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (15)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (40)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1386
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Lys Ile Ser Ser Xaa Trp Ala Glu Lys Leu Thr Gly Xaa Tyr Xaa Val
  1               5                  10                  15

Thr Asn Arg Ile Gln Val Gly Trp Pro Leu Cys Thr Glu Leu Gln Val
             20                  25                  30

Thr Ser Gly Glu Thr Trp Ala Xaa Thr Trp Lys Ala Lys Thr Glu Ala
         35                  40                  45
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<210> 1387
<211> 37
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (23)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (24)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (25)
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<222> (27)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (35)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1387
```
Ala Ile Tyr Arg Ile Val Trp Ala Phe Ser Cys Lys Trp Ser Glu Gly
  1               5                  10                  15

Val Thr Phe Ser Pro Leu Xaa Xaa Xaa Val Xaa Pro Ile Leu Asn Lys
             20                  25                  30

Gly Arg Xaa Glu Thr
         35
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<210> 1388
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (11)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1388

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Gly Xaa Ala Arg Lys Xaa Asp Ala Arg Ile Xaa Lys Ala Trp Val Arg
  1               5                  10                  15

Arg Ala Gly Thr Gly Ser Gly Asn Ser Arg Gly Arg Pro Thr Arg Ser
             20                  25                  30

Gly Ile Met Glu Tyr Asn Met Ser Ser
         35                  40
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<210> 1389
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (4)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (13)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (16)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (25)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (33)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1389
Xaa Cys Leu Xaa Phe Xaa Cys Arg Ser Leu Leu Val Xaa Ser Gly Xaa
1 5 10 15

Thr Arg Arg His Val Ser Pro Pro Xaa Ser Ser Pro Ile Phe Arg Val
20 25 30

Xaa Pro Leu Leu Asn Xaa Gln Arg Pro
35 40

<210> 1390
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (10)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1390
Gly Leu Cys Thr Phe Gly Ser Phe Tyr Xaa Lys Leu Lys Cys Tyr Tyr
1 5 10 15

Leu Gly Leu Tyr Leu Ala Ser Ala Phe Ser Phe Asn Cys Lys Val Glu
20 25 30

Ala Ile Lys Gln Tyr Phe Ser
35

<210> 1391
<211> 71
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (9)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (50)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (70)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1391
Lys Ala Arg Val Tyr Pro Met Lys Xaa Ala Gly Ser Gln Leu Pro Pro
1 5 10 15

Gln Pro Phe Lys Arg Lys His Leu Leu His Arg Ala Val Leu Gly Val
20 25 30

Lys Arg Leu Leu Thr Tyr Asp Arg Val Arg Lys Ser His Ile Leu Val
35 40 45

Asn Xaa Pro Phe Gly Leu Lys Lys Lys Lys Lys Asn Ser Arg Gly Gly
50 55 60

Pro Gly Tyr Pro Ile Xaa Pro
65 70

<210> 1392
<211> 58
<212> PRT
<213> Homo sapiens

<220>
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<400> 1392
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1 5 10 15

Leu Pro Glu Lys Arg Val Ser Tyr Pro Xaa Ser Pro Gly Ser Thr Leu
20 25 30

Lys Lys Asp Leu Ala Thr Glu Gly Ala Leu Gly Leu Pro Xaa Ser Leu
35 40 45

Asp Ser Ser Tyr Lys Cys Pro Cys Ser Gln
50 55

<210> 1393
<211> 42
<212> PRT
<213> Homo sapiens

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<400> 1393
Gly Arg Ala Xaa Ala Ala Gly Pro Xaa Pro Ala Ala Gly Ala Val Ala
1 5 10 15

Ser Tyr Asp Tyr Leu Val Ile Gly Gly Gly Ser Gly Gly Leu Ala Xaa
20 25 30

Val Val Glu Ser His Lys Leu Gly Gly Xaa
35 40

<210> 1394
<211> 38
<212> PRT
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1394
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1 5 10 15

Ala Gln Pro Ser Pro Thr Gln Pro Ser Ser Ala Gln Xaa Ser Pro Ala
20 25 30

Gln Leu Ser Ser Ala Xaa
35

<210> 1395
<211> 66
<212> PRT
<213> Homo sapiens

<400> 1395
Lys Leu Lys Lys His Phe Leu Lys Gly Ala Leu Ile Lys Ser Glu Val
1 5 10 15

Phe Trp Leu Ser Phe Phe Ser Val Tyr Ile Phe Phe Leu Ser Leu Trp
20 25 30

His Arg Val Asp Leu Lys Tyr Ser Ser Ser Ile Leu His Ser Ser Pro
35 40 45

Ser Ile Gly Ser Ser Ser Phe Asn Glu Phe Gln Leu Tyr Leu Thr Ser
50 55 60

Ala Ser
65

<210> 1396
<211> 46
<212> PRT
<213> Homo sapiens

<400> 1396
Leu Leu Leu Lys Arg Phe Pro Phe Leu Phe Lys Leu Leu Met Asp Gln

1 5 10 15

Arg Thr Ile Val Tyr Phe Phe Ser Leu Val Leu Asp Ile Asn Asp Asn
20 25 30

Leu Val Gly Asn Phe Phe Ser Lys Glu Asn Ile Phe Met Asn
35 40 45

<210> 1397
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<212> PRT
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<400> 1397
Met Glu Phe Arg Leu Leu Thr Phe Asn Val Ile Ile Asn Ile Val Gly
1 5 10 15

Phe Lys Cys Thr Val Leu Leu Phe Val Ser Tyr Leu Cys Gln Leu Phe
20 25 30

Phe Asn Val Phe Cys Ser Xaa Xaa Phe Leu Phe Phe Pro
35 40 45

<210> 1398
<211> 63
<212> PRT
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Asn Phe Tyr Ser Xaa Lys Asn Leu Gly Phe Pro Leu Asn Ile Pro Pro
1 5 10 15

Phe Phe Pro Ser Phe Pro Gln Ile Pro Xaa Phe Tyr Phe Phe Gly Glu
20 25 30

Ile Arg Phe Ala Pro Phe Phe Xaa Pro Thr Leu Leu Xaa Glu Met Pro
35 40 45

Xaa Pro Trp Asn Glu Xaa Lys Gly Xaa Xaa Leu Arg Leu Xaa Gly
50 55 60

<210> 1399
<211> 45
<212> PRT
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<220>
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<400> 1399
Ile Leu Xaa His Phe Lys Phe Xaa His Arg Thr Ser Xaa Ser Leu Val
1 5 10 15

Asn Leu Met Leu Ser Lys Lys Glu Gln Leu Leu Gly Pro Lys Lys Lys
20 25 30

Leu Val Xaa Lys Leu Lys Phe Thr Pro Cys Ser Xaa Xaa
35 40 45

<210> 1400
<211> 69
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<400> 1400
Asp Phe Ala Lys Ser Tyr Leu Arg Asn Thr Ile Glu Gly Thr Pro Ala
1 5 10 15

Gly Thr Gly Pro Glu Phe Pro Gly Arg Pro Thr Arg Pro Val Leu Gly
20 25 30

Xaa Thr Xaa Gln Thr Gln Asp Arg Val Asp Ser Ala Cys Asp Gly Val
35 40 45

Xaa Xaa Leu Leu Ala Pro Leu His Gln Cys Leu Xaa His Ile Tyr Ile
50 55 60

Trp Cys Ala Gln Glu
65

<210> 1401
<211> 29
<212> PRT
<213> Homo sapiens

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<400> 1401
Arg Leu Lys Asn Ala Arg Gly Tyr Trp Xaa Ile Ser Ser Tyr Glu Glu
1   5   10   15

Arg Ser Xaa Ser Met Lys Xaa Xaa Gly Arg Lys Met Ser
            20   25

<210> 1402
<211> 74
<212> PRT
<213> Homo sapiens

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<400> 1402
Ser Cys Ser Xaa Arg His Glu Pro Gln Val Gln Thr Phe Gly Val Cys
1 5 10 15

Ala Trp Leu Arg Ser Gln Trp Gly Glu Ala Thr Ile Cys Gly Ile Met
20 25 30

Thr Glu Arg Leu Xaa Val Arg Ile Pro Pro Arg Arg Asn Asp Xaa Ala
35 40 45

Xaa Pro Xaa Ile Leu Gly Trp Pro Leu Ile Ser Gly Pro Pro Pro Val
50 55 60

Pro Ala Gly Gly Ala Gly Pro Gly Ser Arg
65 70

<210> 1403
<211> 64
<212> PRT
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<222> (60)
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<400> 1403

Thr Ser Thr Val Lys Ser Thr Lys Leu Leu Ala Thr Thr Leu Arg Ala
1 5 10 15

Thr Ala Xaa Asn Ser Lys Glu Leu Ala Val Leu His Ile Pro Leu Lys
20 25 30

Arg Xaa Cys Ser Val Ile Asp Lys Pro Arg Ser Xaa Ser Pro Leu Leu
35 40 45

Leu Thr Tyr Xaa Gln Lys Lys Lys Lys Asn Ser Xaa Gly Ala Gly Ser
50 55 60

<210> 1404
<211> 42
<212> PRT
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1404
Gly Xaa Asn Thr His Xaa Lys Ser Pro His Leu Thr Ile Pro Pro Xaa
1   5   10   15

Xaa Xaa Lys Asn Ala Xaa Ile Arg Met Thr Xaa Val Phe Leu Leu Ser
            20   25   30

Lys Xaa Asp Pro Ser Cys Ala Pro Leu Ala
        35   40

<210> 1405
<211> 84
<212> PRT
<213> Homo sapiens

<400> 1405
Lys Leu Leu Leu Gln Gly Leu Ala Thr Cys Arg Gln Glu Glu Ala Glu
1   5   10   15

Leu Asp Ile Arg Pro Gln Gly Cys His Leu Ser Cys Arg Ala Trp Pro
            20   25   30

Cys Gly Gln Gly Ala Val Leu Cys Leu Val Gly Pro Gln Pro Leu Arg
        35   40   45

Ala Glu Met Leu Ser Val Pro Gln Gly Lys Gly Arg Val Phe Trp Lys
    50   55   60

Ala Leu Pro Trp Thr Phe Val Leu Gly Leu Arg Gly Pro Thr Leu Pro
65   70   75   80

His Thr Cys Pro

<210> 1406
<211> 60
<212> PRT
<213> Homo sapiens

<400> 1406
Leu Leu Gly Asp Lys Lys Ala Trp Glu Gly Pro Val Pro Lys Pro Ser
1 5 10 15

Leu Pro Gly Asp Trp Ala Val Ile Pro Leu Leu Pro Gly Leu Leu Pro
20 25 30

Trp Pro Pro Arg Gly Ala Asp Thr Leu Ala Pro Gly Ala Gly Glu Asn
35 40 45

Pro Pro Gly Gly Arg Arg Lys Ala Arg Ala Gly Asp
50 55 60

<210> 1407
<211> 97
<212> PRT
<213> Homo sapiens

<400> 1407
Gln Asn Pro Leu Ser Ser Pro Phe Gly Pro Gly Leu Arg Gly Pro Gly
1 5 10 15

Gly Ala Gly Gly Glu Leu Ser Gly Ala Thr Thr Pro Cys Pro Gln Trp
20 25 30

Thr Asn His Ser Ser Ser Gln Gly Trp Ala Leu Glu Val Pro Gly Arg
35 40 45

Arg Val Pro Leu Pro Ser Ala Ile His Val Arg Ser Leu Val Gly Gly
50 55 60

Pro Gln Ser His Ser Gly Lys Gly Ser Arg Val Gln Pro Ser Ser Cys
65 70 75 80

Ser Phe Pro Ser Leu Ile Ser Ile Asn Leu Ser Thr Pro Leu Leu Trp
85 90 95

Gly

<210> 1408
<211> 36
<212> PRT
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<400> 1408
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Asn Pro Gly Xaa Pro Xaa Val Xaa Phe Pro Pro Xaa Xaa Lys Glu Thr
 1               5                  10                  15

Thr Thr Trp Gly Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
            20                  25                  30

Asn Lys Glu Xaa
        35
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<210> 1409
<211> 70
<212> PRT
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<400> 1409
Cys Gln Glu Cys Arg Leu Val Tyr Val Pro Gly Gly Gly Thr Gln Arg
1 5 10 15

Gly Ala Pro Gly Phe Pro Cys Pro Pro Ala Ala Leu Pro Leu Phe Pro
20 25 30

Phe Phe Pro Asp Xaa Arg Pro Glu Pro Val Pro Xaa Leu Xaa Ile Asn
35 40 45

Leu Cys Glu Ile Lys Lys Lys Lys Lys Lys Asn Ser Gly Gly Gly Pro
50 55 60

Val Pro Xaa Trp Ala Leu
65 70

<210> 1410
<211> 149
<212> PRT
<213> Homo sapiens

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<400> 1410
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Gly Arg Ala Pro Glu Glu Gln Asp Ala Leu Tyr Leu Gln Arg Arg Glu
  1               5                  10                  15

Ala Ala Ser Xaa Pro Xaa Leu Xaa Leu Pro Glu Ser Arg Lys Asp Pro
             20                  25                  30

Pro Trp Asp Ser Ser Val Cys Xaa Lys Asp Ala Pro Xaa Leu Xaa Pro
         35                  40                  45

Gly Phe Pro Ser Xaa Arg His Arg Thr Gln Phe Ser Arg Pro Gly Gly
     50                  55                  60

Arg Ala Pro Ile Thr Pro Gln Ala Lys Xaa Lys Pro Pro Cys Pro Gly
 65                  70                  75                  80

Pro Lys Pro Leu Xaa Pro Pro Phe Pro Trp Phe Pro Arg Glu Pro Val
                 85                  90                  95

Thr Thr Leu Xaa Arg Ala Leu Thr Pro Met Ala Ser Phe Leu Trp Phe
            100                 105                 110

Ser Pro Arg Gly Gln Leu Val Pro Asn Xaa Xaa Xaa Arg Leu Gly Phe
        115                 120                 125

Pro Xaa Lys Lys Asn Phe Gly Phe Ile Xaa Lys Lys Lys Arg Xaa Gly
    130                 135                 140

Gly Gly Gly Pro Gly
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145

<210> 1411
<211> 65
<212> PRT
<213> Homo sapiens

<220>
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<222> (55)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1411
Pro Xaa Leu Gly Ile Xaa Asn Leu Leu Xaa Ser Ser His Cys Pro Lys
1 5 10 15

Pro Ser Xaa Cys Leu Leu Asp Ala Tyr Ser Xaa Cys Gly Tyr Gly Gly
20 25 30

Ser Leu Ser Pro Xaa Ser Asp Met Ser Ser Leu Leu Gly Val Asn Xaa
35 40 45

Ser Xaa Glu Asp Thr Phe Xaa Asn Lys Leu Phe Pro Gln Leu Ile Ser
50 55 60

Val
65

<210> 1412
<211> 116
<212> PRT
<213> Homo sapiens

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<400> 1412
Glu Phe Gln Ser Met Gly Ser Arg Leu Ser Gln Pro Phe Glu Ser Tyr
1 5 10 15

Ile Thr Ala Pro Pro Gly Thr Ala Ala Ala Pro Ala Lys Pro Ala Pro
20 25 30

Pro Ala Thr Pro Gly Ala Pro Thr Ser Pro Ala Glu His Arg Leu Leu
35 40 45

Lys Thr Cys Trp Ser Cys Arg Val Leu Ser Gly Leu Gly Leu Met Gly
50 55 60

Ala Gly Gly Tyr Val Tyr Trp Val Ala Arg Lys Pro Met Xaa Xaa Gly
65 70 75 80

Tyr Pro Pro Ser Pro Trp Thr Ile Thr Gln Met Val Ile Gly Leu Ser
85 90 95

Glu Asn Gln Gly Ile Ala Thr Trp Gly Ile Val Val Met Ala Asp Pro
100 105 110

Lys Gly Lys Ala
115

<210> 1413
<211> 52
<212> PRT
<213> Homo sapiens

<220>
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<400> 1413
Asn Leu Ser Ser Thr Leu Asn Leu Pro Gln Asn Pro Leu Asn Pro Leu
1 5 10 15

Xaa Asn Leu Thr Val Val Gln Arg Gly Thr Ala Leu Trp Thr Leu Gly
20 25 30

Lys Asn Leu Val Glu Arg Gly Lys Xaa Tyr Thr His Ser Xaa Pro Lys
35 40 45

Ser Ser Thr Asn
50

<210> 1414
<211> 52
<212> PRT
<213> Homo sapiens

<220>
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<400> 1414
Pro Thr Glu Gln Val Thr Leu Gly Ile Thr Ala Gln Ser Tyr Ser Arg
1 5 10 15

Val His Ile Asn Asn Arg Val Tyr Asp Leu Asp Val Gly Ser Gly His
20 25 30

Pro Asp Gly Ala Ala Ala Ile Lys Gly Ser Phe Gly Gln Arg Leu Lys
35 40 45

Xaa Tyr Val Ile
50

<210> 1415
<211> 55
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1415
Ser Lys Ser Ala Xaa Phe Gln Arg Leu Trp Tyr Gly Leu Ser Ala Ala
1 5 10 15

Ser Asn Lys Met Lys Ser Gln Asn Arg Ala Xaa Xaa Xaa Lys Ser Ile
20 25 30

Phe Ser Ala Val Leu Asp Cys Thr Xaa Ala Leu Pro Xaa Ile Asp Thr
35 40 45

Gln Thr Pro Leu Gln Thr Gln
50 55

<210> 1416
<211> 65
<212> PRT
<213> Homo sapiens

<220>
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<222> (34)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1416
Ile Cys Pro Gln Asn Pro Leu Asn Pro Leu Val Asn Leu Thr Val Ser
1 5 10 15

Pro Lys Arg Asn Ser Ser Leu Asp Thr Arg Lys Lys Pro Cys Arg Glu
20 25 30

Ser Xaa Lys Phe Asn Thr His Ser Arg Pro Lys Ser Ser His Gln Leu
35 40 45

Arg Lys Arg Gln Ala Gln His Pro Leu Pro Lys Lys Ser Gln Thr Tyr
50 55 60

Asn
65

<210> 1417
<211> 22
<212> PRT

<213> Homo sapiens

<220>
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<400> 1417
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Asp Thr Ser Xaa Gly Thr Gly Pro Met Glu Met Tyr Arg Xaa Phe Pro
 1               5                  10                  15

Ile Leu Val Xaa Ser Leu
            20
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<210> 1418
<211> 54
<212> PRT
<213> Homo sapiens

<220>
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<222> (45)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (52)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1418
Gly Ile Arg Ile Phe Cys Lys Trp Arg His Ile Gln Lys Lys Ser Leu
1 5 10 15

Asn Gly Xaa Ile Gly Met Glu Trp Gly Lys Xaa Phe Trp Lys Xaa Ile
20 25 30

Pro Ile Leu Pro Gly Arg Leu Phe Glu Val Xaa Ile Xaa Val Pro Asn
35 40 45

Lys Val Asn Xaa Phe Leu
50

<210> 1419
<211> 39
<212> PRT
<213> Homo sapiens

<400> 1419
Gln Leu Leu Leu Ser Val Arg Leu His Phe Ala Pro Tyr Asn Tyr Cys
1 5 10 15

Phe Gln Ile Ser Thr Cys Met Cys Leu Ser Leu Lys Ala Leu Val Lys
20 25 30

Ser His Ile Leu Tyr Ser Ala
35

<210> 1420
<211> 45
<212> PRT
<213> Homo sapiens

<220>
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<400> 1420
Gly Gly Gly Ala Xaa Pro Glu Gly Leu Ser Leu Leu Ala Pro Ser Ala
1 5 10 15

Arg Ser Arg Ala Gly Arg Ala Leu Pro Ala Pro Gly Thr Val Pro Gly
20 25 30

Gly Glu Tyr Asp Xaa Xaa Xaa Thr Pro Val Lys Xaa Glu
35 40 45

<210> 1421
<211> 136
<212> PRT
<213> Homo sapiens

<400> 1421
Ala Ala Ala Ala Ala Gly Asp Pro Gly Ala Met Gly Arg Ala Arg Asp
1 5 10 15

Ala Ile Leu Asp Ala Leu Glu Asn Leu Thr Ala Glu Glu Leu Lys Lys
20 25 30

Phe Lys Leu Lys Leu Leu Ser Val Pro Leu Arg Glu Gly Tyr Gly Arg
35 40 45

Ile Pro Arg Gly Ala Leu Leu Ser Met Asp Ala Leu Asp Leu Thr Asp
50 55 60

Lys Leu Val Ser Phe Tyr Leu Glu Thr Tyr Gly Ala Glu Leu Thr Ala
65 70 75 80

Asn Val Leu Arg Asp Met Gly Leu Gln Glu Met Ala Gly Gln Leu Gln
85 90 95

Ala Ala Thr His Gln Gly Ser Gly Ala Ala Pro Leu Gly Ser Arg Pro
100 105 110

Leu Leu Ser Arg Gln Pro Ser Gln Ala Cys Thr Leu Ile Asp Gln His
115 120 125

Arg Ala Ser Leu Ser Arg Arg Ser
130 135

<210> 1422
<211> 115
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1422
Gly Met Thr Pro Phe Cys Gly Leu Lys Cys Asp Ala Leu Gln Lys His
1 5 10 15

His Ser Asp Gly Gln Leu Asp Ser Gly Val Leu Arg Leu Cys Pro Leu
20 25 30

Pro Thr Ala Ser Leu Pro His Pro Ser Leu Gln Ser His Phe Ser Asp
35 40 45

Arg Ala Ile Pro Lys Asn Thr Glu Gly Leu Glu Cys Trp Leu Ala Thr
50 55 60

Leu Cys Leu Ser Gly Leu Pro Lys Ala Trp Lys Lys Glu Gly Pro Asp
65 70 75 80

Cys Gln Gly Asn Leu Leu Ile Gly Leu Arg Arg His Trp Ser Leu Xaa
85 90 95

Cys Gly Ala Pro Gln Ser Cys Arg Ser Asn Ala Leu Leu Ala Xaa Leu
100 105 110

Ala Trp Leu
115

<210> 1423
<211> 52
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1423
Arg Ala His Pro Ser Ile Phe Ala Xaa Ile Val Gly Lys Ile Tyr Arg
1 5 10 15

Phe Glu Gly Glu Gln Thr Tyr Arg Ala Trp Leu Ile Ser Leu Phe Val
20 25 30

Pro Arg Leu Glu Ser Leu Phe Pro Thr Phe Xaa Phe Leu Pro His Gln
35 40 45

Xaa Pro Ser Phe
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<210> 1424
<211> 53
<212> PRT
<213> Homo sapiens

<220>
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<222> (38)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (52)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1424
Leu Cys Lys Gly Glu Pro Lys Leu Arg Pro Pro Lys Pro Asp Glu Leu
1 5 10 15

Pro Lys Lys Gln Leu Lys Glu His Thr Arg Leu Cys Ser Lys Ile Val
20 25 30

Gly Arg Phe Ile Gly Xaa Gly Asp Lys Pro Thr Glu Pro Gly Asp Ser
35 40 45

Trp Phe Pro Xaa Glu
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<210> 1425
<211> 23
<212> PRT
<213> Homo sapiens

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<400> 1425
Leu Phe Phe Phe Leu Asn Xaa Xaa Leu His Xaa Phe Ser Xaa Phe Gln
1 5 10 15

Asp Gly Arg Cys Tyr Gly Phe
20

<210> 1426
<211> 75
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1426
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Lys Gly Leu Glu Lys Gln Xaa Arg Leu Lys Ala Xaa Ser Ser Lys Pro
 1               5                  10                  15

Asn Gln Xaa Ser Xaa Xaa Gly Gln Xaa Val Ala Leu Xaa Val Pro Xaa
            20                  25                  30

Gln Lys Xaa Xaa Xaa Trp Glu Lys Gly Glu Xaa Xaa Gly Asn Xaa Xaa
        35                  40                  45

Leu Lys Leu Xaa Leu Leu Gly Xaa Ile Pro Pro Trp Lys Leu Xaa Ser
    50                  55                  60

Phe Leu Gly Lys Arg Xaa Lys Xaa Gln Pro Xaa
65                  70                  75
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<210> 1427
<211> 174
<212> PRT
<213> Homo sapiens

<220>
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<222> (59)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (89)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (119)
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<220>
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<222> (127)
<223> Xaa equals any of the naturally occurring L-amino acids

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<220>
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<222> (172)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1427
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Pro Pro Cys Cys Cys Pro Thr Thr Pro Thr Cys Ser Arg Cys Gly Arg
 1               5                  10                  15

Cys Arg Gly Gly Trp Ala Ala Gln Leu Thr Gly Arg Arg His Ser Pro
            20                  25                  30

Arg His Ala Gly Ser Pro Arg Pro Ala Arg Trp Pro Cys Lys Thr Ala
        35                  40                  45

Ser Gly Pro Ser Pro Ser Cys His Ala Ala Xaa Gly Asp Met Gly Arg
    50                  55                  60

Val Ala Leu Lys Ser Arg Gly Ala Val Gly Thr Asp Cys Gly Gln Glu
65                  70                  75                  80

Ala Trp Lys Val Trp Cys Gly Cys Xaa Cys Glu Ser Glu Cys Glu Cys
                85                  90                  95

Ala Gly Arg Pro Gln Gly Gln Glu Ala Ala Ala Pro Arg Leu Lys Ala
            100                 105                 110

Met Ala Ala Met Asp Leu Xaa Gln Gly Pro Arg Leu His Gly Xaa Arg
        115                 120                 125

Thr Trp Asn His Asp Ser Gly His Trp Ile Trp Gly Gln Gly His Val
    130                 135                 140

Asp Lys Thr Phe Xaa Thr Val Phe Phe Thr Lys Ala Glu Glu Pro Arg
145                 150                 155                 160
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Met Xaa Pro His Ala Pro Pro Asn Asn Cys Pro Xaa Leu Arg
165 170

<210> 1428
<211> 64
<212> PRT
<213> Homo sapiens

<400> 1428
Ser Ile Gly Ser Gly Thr Ser Cys Arg Thr Gln Leu Lys Thr His Val
1 5 10 15

Phe Phe His Arg Ile Met Cys Gln Phe Phe Val Ala Met Ile Phe Leu
20 25 30

Leu Glu Ser Gln Lys Cys Phe Val Pro Glu His Leu Gln Thr Ala Leu
35 40 45

Arg Lys Asn Ser Gln Asn His Pro Leu Phe Pro Phe Leu Tyr Tyr Leu
50 55 60

<210> 1429
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (45)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (112)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (118)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1429
Asp Xaa Gly Phe Arg Met Ala Ala Pro Val Arg Ile Thr Val Leu Cys
1 5 10 15

Ser Lys Glu Asn Asp Ser Thr Cys Ser Phe Ser Leu Val Glu Val Thr
20 25 30

Leu Val Ser Cys Trp Gly Gly Gly Xaa His Phe Phe Xaa Val Ser Val
35 40 45

Glu Ser Lys Met Asn Asn Lys Ala Gly Ser Phe Phe Trp Asn Leu Arg
50 55 60

Gln Phe Ser Thr Leu Val Ser Thr Ser Arg Thr Met Arg Leu Cys Cys
65 70 75 80

Leu Gly Leu Cys Lys Pro Lys Ile Val Pro Phe Lys Leu Glu His Phe
85 90 95

Glu Ile Thr Phe Ile Thr Glu Cys Asn Gln Arg Met Ile Ile Glu Xaa
100 105 110

Ala Leu Ala Gly Cys Xaa His Phe
115 120

<210> 1430
<211> 54
<212> PRT
<213> Homo sapiens

<400> 1430
Thr Cys Val Thr Lys Lys Lys Met Asn Val Leu Lys Arg Val Leu Gly
1 5 10 15

Gly Trp Phe Asn Lys Glu Thr Lys Met Leu Trp Cys Leu Asp Leu Trp
20 25 30

Leu Leu Lys Met Ser Ser Gln Val Lys Ser Leu Val Cys Leu His Leu
35 40 45

Ile His Phe Cys Thr Asn
50

<210> 1431
<211> 132
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (6)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (131)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (132)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1431
Thr Val Thr Val Xaa Xaa Ser Arg Val Arg Pro Ser Ala Ser Gly Arg
1 5 10 15

Val Phe Met Trp Thr Val Ser Gly Thr Pro Cys Arg Glu Phe Trp Ser
20 25 30

Arg Phe Arg Lys Glu Lys Glu Pro Val Val Val Glu Thr Val Glu Glu

35 40 45

Lys Lys Glu Pro Ile Leu Val Cys Pro Pro Leu Arg Ser Arg Ala Tyr
50 55 60

Thr Pro Pro Glu Asp Leu Gln Ser Arg Leu Glu Ser Tyr Val Lys Glu
65 70 75 80

Val Phe Gly Ser Ser Leu Pro Ser Asn Trp Gln Asp Ile Ser Leu Glu
85 90 95

Asp Ser Arg Leu Lys Phe Asn Leu Leu Ala His Leu Ala Asp Asp Leu
100 105 110

Gly His Val Val Pro Lys Leu Xaa Thr Pro Pro Asp Val Xaa Gly Xaa
115 120 125

Arg Cys Xaa Xaa
130

<210> 1432
<211> 30
<212> PRT
<213> Homo sapiens

<220>
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<222> (8)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (10)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (11)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1432
Ser Gly Thr Val Lys Arg His Xaa Arg Xaa Xaa Ile Ser Gly Arg Pro
1 5 10 15

Pro Ala Pro Pro Arg Xaa Pro Arg Glu Gly Pro Gly Ala Gly
20 25 30

<210> 1433
<211> 43
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (37)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<220>
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<222> (39)
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<220>
<221> SITE
<222> (41)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1433
Thr Pro Leu Ser Gln Asn Pro Ala Gln Ala Glu Arg Tyr Gly Ser Ala
1 5 10 15

Ala Glu Pro Arg Leu Ala Ser Asp Ser Arg Ser Pro Arg Cys Pro Arg
20 25 30

Arg Arg Ala Ala Xaa Xaa Xaa Arg Xaa Pro Pro
35 40

<210> 1434
<211> 47
<212> PRT
<213> Homo sapiens

<220>
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<222> (31)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (40)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (43)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1434
Leu Asn Ala Ser Lys Ser Glu Ser Arg Pro Gly Gly Thr Ile Arg Gln
1 5 10 15

Arg Arg Gly Ala Ser Asp Gly Ser Asp Ser Arg Ser Pro Ala Xaa Pro
20 25 30

Arg Arg Arg Ala Ala Pro Pro Xaa Arg Ala Xaa Arg Ala Arg Glu
35 40 45

<210> 1435
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (17)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (23)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1435
Cys Leu Ser Phe Leu Tyr Tyr His Arg Tyr Phe Pro His Ser Leu Ala
1 5 10 15

Xaa Ala Cys Arg Met Leu Xaa Lys Ser Leu Ile Asn His Trp Ala Lys
20 25 30

Tyr Thr Glu Gly Glu Ala Ser Ser Ile Phe Lys Leu Val Ser Lys Phe
35 40 45

Phe Ile Ala
50

<210> 1436
<211> 96
<212> PRT
<213> Homo sapiens

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<222> (53)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (73)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (80)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (83)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (89)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (90).
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1436
Glu Gln Leu Lys Glu His Thr Arg Leu Cys Ser Lys Ile Val Gly Arg
1 5 10 15

Phe Ile Gly Arg Gly Asp Lys Pro Thr Glu Pro Gly Asp Ser Trp Val
20 25 30

Val Gln Asp Arg Ile Leu Ser Ser Thr Leu Asn Leu Pro Gln Asn Pro
35 40 45

Leu Asn Pro Leu Xaa Asn Leu Thr Gly Ser Pro Lys Arg Asn Ser Ser
50 55 60

Leu Asp Thr Arg Lys Lys Pro Cys Xaa Glu Ser Lys Lys Ile Asn Xaa

65 70 75 80

His Ser Xaa Pro Lys Ser Ser Thr Xaa Xaa Lys Ala Val Lys Leu Thr
85 90 95

<210> 1437
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1437
Ile Cys Pro Gln Asn Pro Leu Asn Pro Leu Val Asn Leu Thr Val Ser
1 5 10 15

Pro Lys Arg Asn Ser Ser Leu Asp Thr Arg Lys Lys Pro Cys Arg Glu
20 25 30

Ser Lys Lys Phe Asn Thr His Ser Arg Pro Lys Ser Ser His Gln Leu
35 40 45

Arg Lys Arg Ser Ser Ser Thr Pro Thr Thr
50 55

<210> 1438
<211> 121
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (108)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1438
Asp Gly Gly Ser Ser Val Gln Ser Glu Ala Glu Ala Ser Val Asp Pro
1 5 10 15

Ser Leu Ser Trp Gly Gln Arg Lys Lys Leu Tyr Tyr Asp Thr Asp Tyr
20 25 30

Gly Ser Lys Ser Arg Gly Arg Gln Ser Gln Gln Glu Ala Glu Glu Glu
35 40 45

Glu Arg Glu Glu Glu Glu Glu Ala Gln Ile Ile Gln Arg Arg Leu Ala

50 55 60

Gln Ala Leu Gln Glu Asp Asp Phe Gly Val Ala Trp Val Glu Ala Phe
65 70 75 80

Ala Lys Pro Val Pro Gln Val Asp Glu Ala Glu Thr Arg Val Val Lys
85 90 95

Asp Leu Ala Lys Gly Ser Val Glu Arg Lys Thr Xaa Lys Cys Cys Lys
100 105 110

Arg Asn His Gln Asn Ser Trp Ser Leu
115 120

<210> 1439
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (71)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (72)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1439
Leu Leu Asn Ile Leu Glu Phe Phe Tyr Ser Trp Tyr Leu Lys Lys Lys
1 5 10 15

Lys Lys Arg Ala Ala Ala Leu Glu Asp Pro Ser Arg Gly Pro Ser Phe
20 25 30

Thr Arg Ala Cys Asp Val His Ser Ser Leu Pro Ile Val Ser Arg Ile
35 40 45

Ile Lys Leu Gly Thr Gly Arg Ala Val Tyr Asn Val Arg Gly Leu Gly
50 55 60

Arg Ser Ala Ser Leu Gly Xaa Xaa Val Glu Gly Thr Leu Leu
65 70 75

<210> 1440
<211> 121

<212> PRT
<213> Homo sapiens

<220>
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<222> (24)
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1440
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Leu Cys Ala Phe Ser Ala Pro Phe Ser Gly Cys Pro Thr Leu Pro Leu
  1               5                  10                  15

His Ala Ala Trp Ala Ala Arg Xaa Arg Xaa Pro Thr Gly Ser Lys Cys
             20                  25                  30

Ala Phe Leu Arg Ala Leu Pro Glu Ser Ser Thr Ala His Pro Val Ala
         35                  40                  45

Pro Cys Leu Ala Trp Pro Gly Leu Pro Gly Pro Ser Leu Pro Met Leu
     50                  55                  60

Leu His Val Leu Ile Phe Leu Phe Gly Pro Leu Leu Pro Pro Leu Ala
 65                  70                  75                  80

Val Leu Pro Leu Gly Leu Xaa Pro Ser Cys Leu Asn Leu Gly Lys Val
                 85                  90                  95

Leu Ser Leu Trp Xaa Ser Ser Ser Xaa Pro Arg Val Leu Glu Pro Gly
            100                 105                 110

Leu Phe Pro Thr Gly Pro Thr Leu Thr
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115 120

<210> 1441
<211> 121
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (2)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (57)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
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<222> (79)
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<220>
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<222> (119)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE

<222> (120)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1441
Gln Xaa Ile Ser Ala Pro Trp Gly Leu Glu Gln Asn Trp Gln Arg Gly
1 5 10 15

Lys Arg Ser Leu Arg Ala Ser Val Thr Gln Asp Leu Pro Pro Ala Cys
20 25 30

Pro Ser Pro Ala Arg Leu Leu Glu Asn Gly His Cys Ala Gln Pro Gly
35 40 45

Pro Trp Ala Ala Gln Ala Gly Val Xaa His Gly Pro Gly Pro Pro Ser
50 55 60

Leu Pro Leu Leu Arg Pro Pro Ala Phe Arg Gln Ala Lys Ala Xaa Phe
65 70 75 80

Xaa Pro Thr Arg Pro Pro Gln Gly Ala Ser Gly Ala Gln Val Gly Pro
85 90 95

Ser Phe Asn Leu Pro Val Val Val Val Gly Ala Leu Xaa Xaa Pro Gln
100 105 110

Arg Ser His Phe Xaa Gly Xaa Xaa Trp
115 120

<210> 1442
<211> 37
<212> PRT
<213> Homo sapiens

<400> 1442
Glu Gln Leu Lys Glu His Thr Arg Leu Cys Ser Lys Ile Val Gly Arg
1 5 10 15

Phe Ile Gly Arg Gly Asp Lys Pro Thr Glu Pro Gly Asp Ser Trp Leu
20 25 30

Ser Lys Ile Glu Ser
35

<210> 1443
<211> 61
<212> PRT
<213> Homo sapiens

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<222> (4)
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<222> (13)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (26)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (34)
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<220>
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<222> (49)
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<220>
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<220>
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<222> (52)
<223> Xaa equals any of the naturally occurring L-amino acids

<220>
<221> SITE
<222> (53)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1443
Ala Lys Pro Xaa Pro Lys Pro Thr Pro Pro Tyr Tyr Xaa Thr Thr Leu
1 5 10 15

Ala Lys Pro Phe Thr Gln Ile Lys Tyr Xaa Arg Tyr Lys Leu Lys Pro
20 25 30

Xaa Xaa Ile His Ile Leu Pro Pro Gly Lys His Glu Lys Leu Xaa Pro
35 40 45

Xaa Xaa Ile Xaa Xaa Gly Leu Thr Pro Ile Pro Ser Ala
50 55 60

<210> 1444
<211> 35
<212> PRT
<213> Homo sapiens

<400> 1444
Asn Ala Tyr Val Asn Phe Phe Leu Phe Leu Ser Ile His Pro Asn Lys
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Lys Ile Thr Gly Lys Pro Met Phe Leu Arg Cys His Tyr Ser Lys Gln
20 25 30

Asn Lys Arg
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<210> 1445
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Gly Arg Gly Ser Ser Gly Leu Met Leu Gly Cys Arg Ser Ala Pro Val
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Ala Thr Pro Pro Xaa Gln Pro Gly Xaa Leu Gly Ala Arg Leu Gly Val
            20   25   30

Leu Thr Gly Val Gly Xaa Thr Pro Asn Ser Lys Ser Leu Arg Lys Arg
        35   40   45

Glu Val Glu Gly Glu Ala Ser Xaa Xaa Ile Lys Ala Pro Ile Arg Ser
    50   55   60

Lys Lys Lys Lys Lys Xaa Xaa Gly Gly Gly Pro Xaa Pro Asn Xaa
65   70   75

<210> 1446
<211> 104

<212> PRT
<213> Homo sapiens

<400> 1446
Phe Ala Cys Ser Arg Arg Gly Val Ala Leu Ile Ser Ala Met Ser Ser
1   5   10   15

Gln Lys Gly Asn Val Ala Arg Ser Arg Pro Gln Lys His Gln Asn Thr
            20   25   30

Phe Ser Phe Lys Asn Asp Lys Phe Asp Lys Ser Val Gln Thr Lys Lys
        35   40   45

Ile Asn Ala Lys Leu His Asp Gly Val Cys Gln Arg Cys Lys Glu Val
    50   55   60

Leu Glu Trp Arg Val Lys Tyr Ser Lys Tyr Lys Pro Leu Ser Lys Pro
65   70   75   80

Lys Lys Cys Val Lys Cys Leu Gln Lys Thr Val Lys Asp Ser Tyr His
                85   90   95

Val Met Cys Arg Pro Cys Ala Leu
            100

<210> 1447
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Tyr Pro Arg Xaa Leu Xaa Cys His Arg Val Ala Gln Ala Cys Pro Ala
1   5   10   15

Thr Pro Arg Ile Thr Leu Trp Pro Ser Ala Ser Gly Met Ser Xaa Arg
20 25 30

Trp Ser

<210> 1448
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<212> PRT
<213> Homo sapiens

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<400> 1448

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His Xaa Xaa Asn Pro Xaa Ser Asn Xaa Lys Tyr His Arg His Xaa Xaa
  1               5                  10                  15

His Lys Glu Tyr Lys Xaa His His Pro Xaa Ala Trp Glu Asn Val Val
             20                  25                  30

Glu Asn Leu His Leu Tyr Xaa Ile Leu Lys Met Lys Leu Gly Val Val
         35                  40                  45

Val His Thr Cys Gly Pro Ser Leu Leu Gly Xaa Leu Gln Pro Gly Xaa
     50                  55                  60

Xaa Ala Pro Xaa Gln Gly Leu Val Ala Ala Met Ser Ser Xaa Leu Ala
 65                  70                  75                  80
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<210> 1449
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<212> PRT
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Gly Thr Val Tyr Leu Glu Leu Arg Gly Phe Pro Arg Thr Met Gly Met
1 5 10 15

Ala Lys Asn Lys Leu Val Lys Ser Asp Pro Gly Thr Gln Gln Leu Ile
20 25 30

Leu Xaa Phe Phe Leu Ser Leu Ser Arg Val Phe Phe Pro Pro Trp Ala
35 40 45

Gly Met His Thr Ala Ala Ala Leu Val Ser Gly Gln Ala Asp Gly Leu
50 55 60

Gly Ala Ser Pro Arg Gly Val Ala Gly Ala Glu Asp Pro Pro Arg Arg
65 70 75 80

Thr Pro Ala Ser Ser Ala Gly Gln Arg Gln Ala Gly Arg Ala Phe Arg
85 90 95

Gly Ala Arg Ala Phe Xaa Gln Ala Cys Ser Pro Xaa Cys Ser
100 105 110

<210> 1450
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<212> PRT
<213> Homo sapiens

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Xaa Ser Ala Glu His Phe His Arg Leu Pro Arg Arg Xaa Xaa Gln Leu
1   5   10   15

Arg Asp Val His His Gly Trp Ala Pro Arg Gly Glu Arg Arg Pro Thr
            20   25   30

Xaa Ala Val Pro Val Arg Glu Arg Glu Gly Phe Arg Gly Val Arg Arg
        35   40   45

Arg Thr Leu Gly Pro Pro Ala Ala Val Tyr Arg Ala Ser His Leu Leu
    50   55   60

Ser Xaa Phe Pro Leu Ser Arg Ser Lys Asn Thr Lys Leu Gly Thr Pro
65   70   75   80

Ser Ala Pro Pro Pro Arg Leu Pro Gly Pro Ile His Asn Phe Asn Xaa
85 90 95

Xaa Pro Gly Ser Pro Ser Phe Arg Gly Gly Leu Gly Arg Gly Cys
100 105 110

<210> 1451
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<212> PRT
<213> Homo sapiens

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<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1451
Xaa Lys Leu Trp Ser Phe Cys Leu Val Ala Leu Lys Xaa Phe Cys Ala
1 5 10 15

Ile Met Gln Gln Tyr Gly Gly Lys Ile Leu Trp Lys Asn Gly Asp Xaa
20 25 30

Leu Xaa Xaa Pro Gln Xaa Ile Lys

35 40

<210> 1452
<211> 40
<212> PRT
<213> Homo sapiens

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<400> 1452
Thr Ser Ser Gly Thr Arg Asp Leu Pro Leu Gly Trp Pro Ala Arg Arg
1 5 10 15

Xaa Arg Xaa Gly Xaa Pro Gly Ser Thr His Ala Ser Ala Ile Leu Leu
20 25 30

Glu Xaa Ile Xaa Leu Ser Pro Pro
35 40

<210> 1453
<211> 67
<212> PRT
<213> Homo sapiens

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<400> 1453
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Xaa Ser Ala Thr Gln Glu Val Arg Ile Leu Leu Ala Ser Ala Gly Cys
 1               5                  10                  15

Cys Phe Phe Ser Gly Ser Gly Thr Gly Arg Gly Pro Val Val Tyr Leu
            20                  25                  30

Thr Gln Met Gly Asp Glu Lys Val Leu Leu Xaa Lys Xaa Lys Thr Leu
        35                  40                  45

Asp Gly Asn Ser Ser Gly Lys Arg Asn Glu Xaa Arg Asn Lys Arg Arg
    50                  55                  60

Lys Gln Xaa
65
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<210> 1454
<211> 44
<212> PRT
<213> Homo sapiens

<400> 1454
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Asn Ser Glu His Ser Thr His Val Trp His Phe Lys Val Lys Thr Ser
 1               5                  10                  15
```

Val Thr Ser Arg Thr Lys Glu Ile Val Ser Tyr Thr Phe Ile Phe Met
20 25 30

Asn Ser Phe Ile Phe Leu Phe Asn Asp Ser Leu Phe
35 40

<210> 1455
<211> 39
<212> PRT
<213> Homo sapiens

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<400> 1455
Thr Ser Thr Ser Trp Cys Val Ser Leu Thr Gly Val Glu Asp Gln Thr
1 5 10 15

Gly Xaa Xaa Xaa Xaa Cys Ser Glu Arg Val Arg Ser Tyr Trp Ile Ile
20 25 30

Ile Xaa Leu Asn Pro Lys Gln
35

<210> 1456
<211> 149
<212> PRT
<213> Homo sapiens

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<400> 1456
Ser Pro Pro Pro Pro Gly Leu Ala Leu Pro Gly Gly Tyr Asp Trp Ser
1   5   10   15

His Trp Ser Arg Arg Ile Pro Ala Ser Ser Val Ala Ala Ser Thr Ser
            20   25   30

Leu Ser Arg Pro Arg Pro Ala Pro Arg Arg Leu Leu Trp Val Arg Pro
        35   40   45

Pro Arg Gly Ala Ala Xaa Ser Gln Ala Ala Gly Gln Ala Arg Leu Lys
    50   55   60

Ser Leu Gln Trp Leu Thr Asn Leu Ser Leu Ser Val Leu Thr Trp Pro
65   70   75   80

Xaa Ile Asp Tyr Gly Arg Leu Gly Val Asn Ser Ile Pro Thr Ile Lys
                85   90   95

Val Ile Ser Gln Ser Pro Leu Xaa Gln Ala Thr Val Met Ser Ser Xaa
            100   105   110

Xaa Phe Gly Gly Ile Ala His Thr Xaa Xaa Thr Glu Xaa Xaa Arg Asn
        115   120   125

Asp Thr Asn Met Ser Gln Ser Phe Xaa Gly Asn Leu Asp Pro Trp Asn
    130   135   140

Val Phe Ser Xaa Trp
145

<210> 1457
<211> 140
<212> PRT
<213> Homo sapiens

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<400> 1457
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Glu Ala Ala Ala Leu Gly Leu Ser Gln Pro Ser Gly Cys Trp Cys Cys
 1               5                  10                  15

His Pro Pro Ala Leu Ser Leu Trp His Phe Pro Pro Leu Arg Pro Trp
            20                  25                  30

Arg Ala Leu Pro Val Gly Leu Ala Ala Pro Gln Asn Leu Gly Pro Ser
        35                  40                  45

Ser Ser Ile Gly Phe Ser Pro Gly Phe His Leu Leu Pro Arg Ala Gln
    50                  55                  60

Pro Leu Thr Cys Phe Ile Gly His Ser Gly Cys Ser Leu Thr Gln Trp
65                  70                  75                  80

Leu Val Gly Arg Gly Val Thr Glu Gly Ser Gln Gly Pro Val Gly Val
                85                  90                  95

Pro Gly Gln Lys Asn Trp Leu Gln Leu Pro Val Trp Ser Arg Val Phe
            100                 105                 110

Arg Val Asn Val Xaa Asn Phe Lys Gly His Ser Xaa Asn Gln Leu Gly
        115                 120                 125

Val Lys Ser Leu Arg Met Xaa Asn Leu Xaa Gly Arg
    130                 135                 140
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<210> 1458
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<400> 1458
Pro Pro Arg Cys Ser Arg Ser Xaa Thr Ser Xaa Xaa Pro Gly Cys Arg
1 5 10 15

Asn Ser Ala Arg Ala Cys Lys Thr Ala Gly Cys Thr Ala Ser Ser Lys
20 25 30

Pro Arg Xaa Ser Glu Gln Ile Leu Arg
35 40

<210> 1459
<211> 56
<212> PRT
<213> Homo sapiens

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<400> 1459
Arg Val Phe Phe Phe Phe Phe Phe Phe Leu Asp Gly Ile Phe Asn Leu
1 5 10 15

Phe Ile Met Phe Val Ser Tyr Arg His Leu Cys Phe Xaa Gln Gln Phe
20 25 30

Ile Ile Val Thr Ser His Thr Ser Xaa Ile Thr Thr Glu Arg Thr Leu
35 40 45

Lys Tyr Lys Glu Arg Leu Gln Lys
50 55

<210> 1460
<211> 56
<212> PRT
<213> Homo sapiens

<400> 1460
Pro Gln Asn Pro Leu Asn Pro Leu Val Asn Leu Thr Val Ser Pro Lys
1 5 10 15

Arg Asn Ser Ser Leu Asp Thr Arg Lys Lys Pro Cys Arg Glu Ser Lys
20 25 30

Lys Phe Asn Thr His Ser Arg Pro Lys Ser Ser His Gln Leu Arg Lys
35 40 45

Arg Ser Ser Ser Thr Pro Thr Thr
50 55

<210> 1461
<211> 124
<212> PRT
<213> Homo sapiens

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<400> 1461
Gly Phe Arg Glu Asn Lys Leu Lys Xaa Ile Lys Phe Val Lys Ser Asn
1 5 10 15

Tyr Ile Tyr Ile Lys Lys Pro Ile Cys Ile Arg Gln Lys Leu Phe Leu
20 25 30

Phe Ile Ser Val Arg Tyr Pro Leu Asn Lys Tyr Phe Ser Gly Xaa Lys
35 40 45

Lys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa Lys Gly Gly Arg
50 55 60

Xaa Lys Gly Ser Xaa Leu Thr Phe Ala Cys Xaa Gln Arg His Thr Ser
65 70 75 80

Pro Xaa Leu Ser Pro Asn Phe Xaa Pro Leu Ala Val Phe Leu Gln Pro
85 90 95

Ser Xaa Leu Gly Lys Ser Xaa Xaa Val Xaa Gln Leu Lys Pro Pro Cys
100 105 110

Xaa Tyr Ile Pro Phe Ser Pro Ala Xaa Arg Xaa Phe
115 120

<210> 1462
<211> 51
<212> PRT
<213> Homo sapiens

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<400> 1462
His Glu Ala Ala Pro Glu Phe Gly Arg Lys Ile Glu Ala Glu Asp Val
1 5 10 15

Glu Gly Ser Cys Gly Gly Gly Ser Asp Ala Ser Gly Thr Lys Leu Arg
20 25 30

Asn Ser Leu Thr Asp Pro Val Pro Arg Glu Arg Gly Ser Pro Gln Ala
35 40 45

Leu Leu Xaa

50

<210> 1463
<211> 80
<212> PRT
<213> Homo sapiens

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<400> 1463
His Xaa Phe Ala Thr Val Met Asp Val Tyr Xaa Asn Pro Xaa Arg Val
1 5 10 15

Cys Leu Pro Ala Leu His Pro Lys Ala His Leu Leu Pro Pro Leu His
20 25 30

Leu Arg Xaa Lys Thr Leu Gln Thr Ala Asp Thr Arg Lys Xaa Asn Ser
35 40 45

Gln Leu Cys Leu Met Leu Leu Val Ser Ser Thr Ser Xaa Gln Asn Arg
50 55 60

Tyr His Ala Glu Phe Arg Gly Pro Cys Xaa Ser Lys Ser Leu Leu Phe
65 70 75 80

<210> 1464
<211> 81
<212> PRT
<213> Homo sapiens

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Thr Thr Met Arg Ile Asn Xaa Xaa Asp Ala Leu Cys Thr Pro His Ser
20 25 30

His Glu Pro Lys Lys Ile Phe Xaa Xaa Phe Leu Met Lys Glu Lys Xaa
35 40 45

Cys Pro Leu Trp Xaa Leu Pro Pro Xaa Phe Xaa Xaa Xaa Ile Leu Phe
50 55 60

Xaa Leu Pro Pro Pro Lys Asn Pro Xaa Xaa Xaa Cys Phe Leu Ala Xaa
65 70 75 80

Pro

<210> 1465
<211> 34
<212> PRT
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<400> 1465
Ile Gln Leu Gly Glu Pro Ala Gly Leu Val Arg Gln Xaa Leu Gly Leu
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Cys Gln Gln Gln Glu Val Lys Arg Xaa Thr Leu Pro Pro Ser Pro Pro
20 25 30

Xaa Xaa

<210> 1466
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<400> 1466
Thr Val Leu Pro Xaa Met Xaa Ser Pro Met Gly His Pro Xaa Xaa Phe
1 5 10 15

Pro Lys Pro Pro Xaa Lys His Thr Trp Ser Gln Ser Leu Leu Pro Pro
20 25 30

Ala Leu Pro Leu Asn Trp Lys Gln Xaa Cys Ala Arg Trp Xaa Gly Leu
35 40 45

Pro Gly Arg Gln Pro Leu Pro Xaa Ser Xaa Ala Lys Pro Xaa Ala Xaa
50 55 60

Glu Arg Leu Leu Leu Arg Cys Pro Cys Pro Gly Leu Leu Thr Leu Ala

65 70 75 80

Thr Xaa Thr Tyr Xaa Ala Leu Gly Leu Gln Pro Xaa Pro Xaa Leu His
85 90 95

Xaa Cys Trp Pro Xaa Arg Leu Leu Xaa Xaa Ser Ile Asp Leu Val Xaa
100 105 110

Xaa Lys Ser His Trp Xaa Ser Trp His Trp Arg Val Leu Val Xaa Gly
115 120 125

Leu Xaa Ser Glu Ala Cys Xaa Arg Val Ser Leu Asn Ser Xaa Met His
130 135 140

Ala Leu Gly Leu Ser Cys Ser
145 150

<210> 1467
<211> 34
<212> PRT
<213> Homo sapiens

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<400> 1467
Gly Asn Leu Xaa Gly Gly Cys Gln Asn Leu Asn Lys Lys Met Ala Pro

1 5 10 15

Thr Xaa His Ser Gln Thr Pro Leu Trp Xaa Leu Ala Leu Lys Xaa Lys
20 25 30

Xaa Arg

<210> 1468
<211> 40
<212> PRT
<213> Homo sapiens

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<400> 1468
His Val Leu Met Leu Ala Ala Asp Leu Asn Thr Leu Lys Val Leu Cys
1 5 10 15

Arg Lys Lys Lys Xaa Xaa Arg Ala Ala Ala Leu Glu Asp Pro Ser Leu
20 25 30

Arg Thr Arg Ala Cys Asp Xaa Ile
35 40

<210> 1469
<211> 30
<212> PRT
<213> Homo sapiens

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<400> 1469
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Ala Leu Cys Phe Lys Arg Leu Thr Gly Asn Tyr Ile Trp Xaa Thr Phe
  1               5                  10                  15

Xaa Ala Leu Thr Leu Lys Xaa Leu Lys Ile Gln Val Asp Lys
             20                  25                  30
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<210> 1470
<211> 87
<212> PRT
<213> Homo sapiens

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<400> 1470

Thr Ser Pro Ser Arg Lys Cys Glu Glu Pro Gln Ala His Xaa Cys Ser
1 5 10 15

Ser Ala Pro Ser Leu Thr Phe Ser Pro Gly Gln Val Cys Ile Cys Ser
20 25 30

Leu His Trp His Phe Tyr Phe Gln Pro Leu Gly Ser Cys Phe Cys Leu
35 40 45

Leu Leu Arg Asn Leu Ser Pro Trp Gly Ser Phe Thr Thr Pro Ser Asn
50 55 60

Ile Gly Ser Gln Arg Xaa Thr Arg Glu Gly Xaa Phe Pro Arg Xaa Gly
65 70 75 80

Pro Asn Phe Xaa Arg Glu Phe
85

<210> 1471
<211> 65
<212> PRT
<213> Homo sapiens

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<400> 1471
Gly Ala Glu Asp Gly Gly Cys Ser Ile Cys Val Val Leu Leu Ser Thr
1 5 10 15

Leu Leu Cys Leu Ala Pro Asp Ser Ala Leu Cys Ser Leu Ala Gln Gln
20 25 30

Leu Cys Leu His Ile Ile Phe Met Val Leu Leu Cys Asn Ser Xaa Leu
35 40 45

Arg Trp Val Ala Thr Val Gln Ile Phe Ile Thr Leu Phe Arg Leu Ser
50 55 60

Glu
65

<210> 1472
<211> 68
<212> PRT

<213> Homo sapiens

<400> 1472
Thr Pro Ile Asn Leu Thr Thr Ser Cys Ser Ala Tyr Ile Pro Pro Ser
1 5 10 15

Ser Ala Asn Pro Asp Glu Gly Tyr Lys Val Ser Ala Ser Thr His Val
20 25 30

Lys Thr Leu Gly Gln Gly Val Ala His Glu Val Ala Arg Asn Gly Leu
35 40 45

His Phe Leu Pro Gln Lys Thr Thr Ile Ala Leu Met Lys Leu Lys Gly
50 55 60

Arg Arg Trp Ile
65

<210> 1473
<211> 132
<212> PRT
<213> Homo sapiens

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<400> 1473
Xaa Gly Gly Gly Gly Glu Xaa Phe Phe Xaa Pro Pro Ser Arg Gly Gly
1 5 10 15

Xaa Leu Xaa Phe Gly Val Asn Lys Pro Leu Pro Pro Gly Xaa Pro Arg
20 25 30

Gly Ser Pro Gly Lys Xaa Phe Xaa Pro Gly Gly Phe Arg Xaa Xaa Leu

35 40 45

Ile Ala Xaa Xaa Pro Gly Xaa Phe Xaa Pro Lys Lys Asn Lys Xaa Xaa
50 55 60

Phe Pro Phe Xaa Pro Xaa Leu Thr Trp Ala Ala Phe Ala Gln Lys Gly
65 70 75 80

Phe Gly Gly Gly Xaa Lys Gly Gln Xaa Pro Leu Xaa Leu Glu Thr Gly
85 90 95

Glu Lys Leu Gln Leu Trp His Xaa Ala Leu Xaa Val Val Pro Thr Cys
100 105 110

Lys Arg Gly Gln Xaa Gly Gly Asn Leu Asn Leu Pro Ser Lys Lys Lys
115 120 125

Leu Ala Lys Tyr
130

<210> 1474
<211> 32
<212> PRT
<213> Homo sapiens

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<400> 1474
Ile Ile Met Ala Lys Lys Ser Ser Leu Arg Asn Lys Val Pro Phe Ser
1 5 10 15

Glu Lys Lys Lys Lys Lys Lys Lys Xaa Gly Gly Pro Phe Xaa Xaa Thr
20 25 30

<210> 1475
<211> 51
<212> PRT
<213> Homo sapiens

<400> 1475
Tyr Val Ala Leu Leu Asn Ile Thr Leu Arg Thr Arg Arg Leu Glu Thr
1 5 10 15

Thr Asn Pro Asn Tyr Val Ile Gly Lys Cys Arg Ile Lys Arg Pro Met
20 25 30

Tyr Ile Ser Thr Asp His Trp Ala Ile Met Leu Leu Leu Arg Leu Tyr
35 40 45

Ala Val Leu
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<210> 1476
<211> 70
<212> PRT
<213> Homo sapiens

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<400> 1476
Thr Phe Leu Ser Gly Gly Glu Val Val Asn Gly Gly Gly Cys Ala Cys
1 5 10 15

Val Xaa Ala Arg Val Ile Trp Glu Phe Ser Val Pro Ser Val Gln Phe
20 25 30

Cys Tyr Glu Pro Lys Thr Ala Leu Lys Asn Asn Leu Cys Phe Lys Lys

35 40 45

Val Xaa Val Leu Tyr Xaa Leu Leu Leu Glu Ile Phe Val Ala Ile Phe
50 55 60

Thr Trp Lys Asn Thr Gly
65 70

<210> 1477
<211> 90
<212> PRT
<213> Homo sapiens

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<400> 1477
His Arg Thr Pro Val Pro Ala Arg Gly Gly Ala Arg Ala Leu Pro Arg
1 5 10 15

Ala Arg Gly Ala Trp Arg Gly Gly Arg Pro Ala Gly Gly Asp Arg Arg
20 25 30

Gly Thr Gly Tyr Pro Arg Pro Thr Glu Ala Pro Arg Arg Cys Arg Ile
35 40 45

Val Pro Pro Gly Xaa Asp Ser Asp Leu Glu Ala Phe Ser His Asn Pro
50 55 60

Thr Asp Gly Ser Phe Ala Pro Leu Ala Pro Gln Xaa Ser Thr Tyr Thr
65 70 75 80

Lys Cys Leu Asn Leu Arg Xaa Leu Ser Tyr
85 90

<210> 1478
<211> 70
<212> PRT
<213> Homo sapiens

<400> 1478
Ile Pro Asn Ile Leu Phe Asn Met Ile Lys Leu Ile Leu Asn Glu Ile
1 5 10 15

Leu Cys Cys Ser Leu Val Asn Leu Ser Phe Val Ile Leu Leu Val Cys
20 25 30

Leu Ser Cys Glu Gly Leu Gln Ser Asp Met Pro Ile Phe His Ser Gln
35 40 45

Ser Asn Tyr Lys Arg Ile Val Thr Ile Thr Gln Leu Cys Gln Glu Ile
50 55 60

Phe Phe Asn Ser Leu Arg
65 70

<210> 1479
<211> 59
<212> PRT
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<400> 1479
Pro Val Pro Pro Ser Ser Ser Ala Arg Xaa Gly Gly Gly Gly Xaa Arg
1 5 10 15

Arg Gly Arg Gly Xaa Val Pro Pro Ala Gly Xaa Ala Pro Gly Ala Xaa
20 25 30

Val Pro Ala Ala Pro Arg Leu Gly Arg Arg Leu Xaa Ala Asp Leu Glu
35 40 45

Leu Val Arg Xaa Arg Gly Ile Arg Leu Phe Asn
50 55

<210> 1480
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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<400> 1480
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Leu His Pro Arg Pro Gly Leu Asp Val Met Gly Cys Gly Pro Leu Pro
  1               5                  10                  15

Ala Glu Pro Ile Xaa Arg Gln Val Arg Ala Ala Leu Gln Thr Phe Ala
             20                  25                  30

His Leu Xaa Ala Ser Xaa Pro Lys Val Pro Gly Gln Pro Glu Ala Pro
         35                  40                  45

Arg Pro Gln Pro Arg Xaa Pro Gln Xaa Phe Glu Ser Gly Ala His Ser
     50                  55                  60

Arg Ser Pro Leu Ala Leu Pro Thr Pro Ala Arg Xaa Gly Gly Xaa Ser
 65                  70                  75                  80

Cys Pro Arg Xaa Arg Xaa Ala Pro Glu Asn Xaa Thr Pro Pro Leu Arg
                 85                  90                  95

Arg Thr Asn
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<210> 1481
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<212> PRT
<213> Homo sapiens

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<222> (7)
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<220>
<221> SITE
<222> (14)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1481
Ser Pro Ser Leu Ile Arg Xaa Pro Ile Gly Lys Ala Glu Xaa Ala Cys
1 5 10 15

Arg Tyr Arg Val Arg Glu Phe Pro Gly Arg Pro Thr Arg Pro Ile Thr
20 25 30

Ser Cys Arg Pro Pro Asn Ile Asn Leu
35 40

<210> 1482
<211> 99
<212> PRT
<213> Homo sapiens

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<400> 1482
Pro Arg Xaa Arg Glu Ile Pro Gly Gly Arg Thr His Ala Phe Arg Glu
1 5 10 15

Lys Ala Cys Xaa Lys Gln Gly Glu Xaa Arg Xaa Glu Lys Gly Gly Leu
20 25 30

Val Ile Ser Lys Ser Leu Glu Arg Trp Glu Trp Thr Lys Lys Met Gly
35 40 45

Thr Pro Pro Leu Phe Gln Ala Trp Glu Gly Val Leu Asn Gly Arg Asp
50 55 60

Phe Leu Phe Pro Ala Thr Lys Arg Leu Phe Thr Thr Tyr Pro Val Lys
65 70 75 80

Ser Lys Phe Ile Phe Gln Glu Phe Asn Met Tyr Phe Ser Trp Xaa Tyr
85 90 95

Leu Cys Gln

<210> 1483
<211> 49
<212> PRT
<213> Homo sapiens

<400> 1483
Cys Asn Ser Val Ser Phe Arg Phe Leu Ser Cys Phe Cys Lys Leu Trp
1 5 10 15

Glu Arg Leu Thr Met Gln Met Cys Gln Arg His Thr Val Gly Cys Asn
20 25 30

Ile Asn Asn Phe Lys Cys Lys Phe Leu Trp Ile Asn Tyr Phe Tyr Ile
35 40 45

Leu

<210> 1484
<211> 51
<212> PRT
<213> Homo sapiens

<400> 1484
Cys Lys Gln Tyr Leu Thr Asn Pro Gln Val Leu Asn Tyr Gln Thr Cys
1 5 10 15

Ile Lys Asn Phe Gly Trp Gly Asp Leu Gly Ala Glu Pro Asn Leu Arg
20 25 30

Ala Val His Ala Lys Thr Ser Pro Val Lys Ala Asn Tyr Tyr Thr Gln
35 40 45

Leu Ile Gln
50

<210> 1485
<211> 22
<212> PRT
<213> Homo sapiens

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<222> (14)
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<400> 1485
Leu Ser Leu Leu His Glu Xaa Pro His Val Gly Xaa Xaa Xaa Phe Asp
1   5   10   15

Ile Leu Val Pro Arg Xaa
            20

<210> 1486
<211> 126
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (112)
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<400> 1486
Glu Gln Thr Cys Phe Leu Asn Leu Val Ile Phe Val Lys Asn Cys Leu
1   5   10   15

Asp Ser Phe Ser His Gln Arg Glu Ser Thr Ser Ser Glu Ser Ala Ser
            20   25   30

Ala Pro Cys Ser Leu Leu Leu Arg Gly Arg Val Thr Ser His Trp Gln
        35   40   45

Ala Ser Gly Ile Val Cys Glu Ala Leu Gln Arg Ala Ala Pro Gly Ser
    50   55   60

Cys Leu Tyr Lys Asn Ile Leu Leu Pro Ala Ala Leu Ser Leu Ala Leu
65   70   75   80

His Phe Gly His Asp Ile Arg Cys Val Phe Ile Gln Leu Val Val Lys
                85   90   95

Met Leu Leu Leu Asn Gly Ser Ala Tyr Leu Cys Leu His Gly Leu Xaa
            100   105   110

Glu Val Gly Phe His Gly His Ser Val Ser Thr Asp Leu Glu
        115   120   125

<210> 1487
<211> 51
<212> PRT

<213> Homo sapiens

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<400> 1487
Val Glu Ala Thr Asn Leu Pro Glu Pro Gly Asp Ser Trp Xaa Val Gln
1 5 10 15

Asp Lys Asn Leu Ser Ser Thr Phe Lys Phe Trp Pro Thr Xaa Pro Xaa
20 25 30

Lys Phe Pro Trp Xaa Ile Asn Arg Xaa Val Gln Glu Gly Pro Gly Xaa
35 40 45

Gly Thr Pro
50

<210> 1488
<211> 37
<212> PRT
<213> Homo sapiens

<400> 1488
Glu Gln Leu Lys Glu His Thr Arg Leu Cys Ser Lys Ile Val Gly Arg
1 5 10 15

Phe Ile Gly Arg Gly Asp Lys Pro Thr Glu Pro Gly Asp Ser Trp Leu
20 25 30

Ser Lys Ile Glu Ser
35

<210> 1489
<211> 26
<212> PRT
<213> Homo sapiens

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<400> 1489
Gly Gly Met Arg Xaa Ser His Leu Gln Leu Leu Ser Xaa Glu Arg Thr
1 5 10 15

Leu Gly Thr Glu Lys Asn Arg Gly Xaa Xaa
20 25

<210> 1490
<211> 39
<212> PRT
<213> Homo sapiens

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<400> 1490
Ser Phe Leu Ile Xaa Ser Phe Xaa Ile Lys Arg Xaa Arg Asn Leu Met
1 5 10 15

Thr Gly Arg His Ser Phe Lys Thr Tyr Ser Gln Xaa Pro Ile Thr Ala
20 25 30

Gln Asn Xaa Ile Xaa Cys Leu
35

<210> 1491
<211> 55
<212> PRT
<213> Homo sapiens

<400> 1491
Thr Leu Ala Tyr Phe Val Ile Asp Tyr Lys Gln Ile Glu Glu Ile Thr
1 5 10 15

Ile Ser His Phe Cys Ile Phe Ser Lys Ile Ile Leu Leu Gln Ser Ser
20 25 30

Ile Tyr Cys Val Pro Leu Ile Phe Tyr Cys Glu Ser Lys Glu Phe His
35 40 45

Gln Asn Ile Leu Asn Tyr Glu
50 55

<210> 1492
<211> 37
<212> PRT
<213> Homo sapiens

<400> 1492
Glu Gln Leu Lys Glu His Thr Arg Leu Cys Ser Lys Ile Val Gly Arg
1 5 10 15

Phe Ile Gly Arg Gly Asp Lys Pro Thr Glu Pro Gly Asp Ser Trp Leu
20 25 30

Ser Lys Ile Glu Ser
35

<210> 1493
<211> 58
<212> PRT
<213> Homo sapiens

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<400> 1493
Ile Cys Pro Xaa Asn Pro Leu Asn Pro Leu Val Asn Leu Thr Val Ser
1 5 10 15

Pro Lys Arg Asn Ser Ser Leu Asp Thr Arg Lys Lys Pro Cys Arg Glu
20 25 30

Ser Lys Lys Phe Asn Thr His Ser Arg Pro Lys Ser Ser His Gln Leu
35 40 45

Arg Lys Arg Ser Ser Ser Thr Pro Thr Thr
50 55

<210> 1494
<211> 95
<212> PRT
<213> Homo sapiens

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Glu Ser Trp Leu Cys Ser Gly Gly Gly Met Gln Gly His Leu Leu Lys
1   5   10   15

Glu Gly His Gly Gln Asn Asn Ile Glu Phe Pro Ala Pro Leu Gly Ser
            20   25   30

Asp Leu Leu Asp Thr Glu Pro Pro Phe Lys Met Gly Gln Gly Lys Gly
        35   40   45

Gly Ser Val Gln Ser Pro Asp Leu Glu Leu Pro Glu Ala Ile Ala Ala
    50   55   60

Leu Phe Thr Ser Lys Gly Pro Val Leu Arg Leu Phe Val Leu Ile Tyr
65   70   75   80

Phe Lys Leu Gly Lys Ala Gly Gly Arg Val Xaa Pro Xaa Xaa Xaa
                85   90   95

<210> 1495
<211> 67

<212> PRT
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<223> Xaa equals any of the naturally occurring L-amino acids

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<400> 1495
Leu Ala Pro Gln Ala Gly Val Pro Pro His Ser Ala Pro Arg Pro Xaa
1 5 10 15

Ser Xaa Leu Ser Xaa Xaa Pro Gly Pro Ala Pro Val Pro Pro Arg Pro
20 25 30

Arg Ser Ala Gly Pro Pro Trp Ser Ala Gly Leu Asp Arg Xaa Gly Gly
35 40 45

Ala Trp Leu Leu Val Ala Xaa Arg Ala Leu Xaa Gln Xaa Leu Ser Ser
50 55 60

Asp Leu Xaa
65

<210> 1496
<211> 76
<212> PRT
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1496
Glu Asn Pro Ser Lys Val Asn Ser Pro Ala Leu Gly Xaa Xaa Ser Xaa
1 5 10 15

Ala Ser Trp Arg Leu Xaa Val Xaa Leu Ile Ser Gly Asn Pro Xaa Gln
20 25 30

Ile Cys Ser Tyr Xaa Ser Arg Arg Xaa Ile Gly Ser Val Tyr Cys Asp
35 40 45

Gly Asn Xaa Asn Val Thr Val Lys Arg Phe Ala Phe Cys Gly Leu Gly
50 55 60

Arg Ala Xaa Asn Phe Leu Leu Arg Leu Ser Leu His
65 70 75

<210> 1497
<211> 103
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1497
Leu Pro Arg Cys Ala Pro Gly Ser Gln Ala Pro Pro Glu Gly Pro Trp
1   5   10   15

Pro Arg Arg Ile Arg Arg Val Arg Pro Gly Pro Arg Val Arg Gln Pro
            20   25   30

Arg Arg Pro Ser Ala Ser Leu Arg Pro Ser Arg Ala Arg Pro Gly Arg
        35   40   45

Ser Xaa Phe Pro Arg Pro Pro Pro Xaa Arg Leu Pro Ala Ala Ser Arg
    50   55   60

Val Gly Ala Xaa Arg Gly Leu Xaa Pro Leu Leu Lys Phe Glu Ser Xaa
65   70   75   80

Asn Gln Xaa Val Arg Asn Pro Glu Ile Pro Asp Pro Leu Arg Lys Met
                85   90   95

Phe Ser Xaa Glu Gly Glu Arg
            100

<210> 1498

<211> 32
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1498
Gly Arg Xaa Gly Gly Arg Ala Gly Gly His Glu Ala Arg Ala Ala Xaa
1 5 10 15

Ala Gly Gly Val Gly Arg Arg Ala Arg Gly Gly Gly Arg Xaa Gly Met
20 25 30

<210> 1499
<211> 69
<212> PRT
<213> Homo sapiens

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<400> 1499
Val Ser His Leu Leu Ala Gly Phe Cys Val Trp Val Val Leu Xaa Trp
1 5 10 15

Val Gly Gly Ser Val Pro Asn Leu Gly Pro Ala Glu Gln Xaa Gln Asn
20 25 30

His Tyr Leu Pro Ser Cys Leu Ala Val Arg Arg Glu Trp Xaa Ala Asp
35 40 45

Cys Lys Gly Leu Gly Ala Val Phe His Asn Leu Xaa Leu Xaa Gln Val
50 55 60

Gln Gly Leu Xaa Leu
65

<210> 1500
<211> 109
<212> PRT
<213> Homo sapiens

<220>
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<400> 1500
Asn His Glu Arg Asn Lys Lys Glu Thr Lys Gln Lys Arg Asn Glu Lys
1 5 10 15

Asp Ile Met Met Ser Ser Lys Pro Thr Ser His Ala Glu Val Asn Glu
20 25 30

Thr Ile Pro Asn Pro Tyr Pro Pro Ser Ser Phe Met Ala Pro Gly Phe

35 40 45

Gln Gln Pro Leu Gly Ser Ile Asn Leu Glu Asn Gln Ala Gln Gly Ala
50 55 60

Gln Arg Ala Gln Pro Tyr Gly Ile Thr Ser Pro Gly Ile Phe Ala Ser
65 70 75 80

Ser Gln Pro Gly Gln Gly Asn Ile Xaa Met Ile Asn Pro Ser Val Gly
85 90 95

Thr Ala Val Met Asn Phe Lys Arg Lys Lys Gln Arg His
100 105

<210> 1501
<211> 71
<212> PRT
<213> Homo sapiens

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<222> (11)
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<400> 1501
Val Asp Glu Gly Gly Tyr Trp Gly Trp Leu Xaa Xaa Lys Ile Met Glu
1 5 10 15

Asn His Phe Ser Ile His Leu Pro Ile Leu Asn Leu Xaa Asn Lys Val

20 25 30

Ile Tyr Cys Lys Val Leu Cys Pro Leu Lys Glu Val Leu Lys Arg Val
35 40 45

Arg Met Asp Leu Lys Lys Asn Xaa Asn Leu Glu Xaa Phe Lys Met Val
50 55 60

Phe Val Gly Arg Phe Leu Leu
65 70

<210> 1502
<211> 52
<212> PRT
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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1502
Val Pro Leu Gln Val Pro Val Arg Asn Ser Arg Val Xaa Pro Arg Val
1 5 10 15

Arg Xaa Xaa Ser Asn Val Cys Gln Asn Ser Gln Phe Xaa Ala Ser Lys
20 25 30

Ser Xaa Tyr Ile Glu Ser Ala Xaa Phe Leu Phe Phe Leu Phe Phe Phe
35 40 45

Phe Xaa Phe Phe
50

<210> 1503
<211> 34
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1503
Leu Asp Ile Lys Gln Xaa Thr Met His Gln Glu Tyr Lys Xaa Gly Lys
1 5 10 15

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Xaa Lys Lys
20 25 30

Xaa Lys

<210> 1504
<211> 36
<212> PRT
<213> Homo sapiens

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<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1504
Xaa Leu Glu Pro Gln Pro Gly Pro Xaa Arg Pro Xaa Arg Pro Pro Ser
1   5   10   15

Arg Arg Ser Trp Xaa Gln Gly Lys Pro Thr Gly Xaa Glu Arg Glu Ala
            20   25   30

Ala Ala Arg Ser
        35

<210> 1505
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<212> PRT
<213> Homo sapiens

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<222> (3)
<223> Xaa equals any of the naturally occurring L-amino acids

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<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1505
Ala Val Xaa Phe Asn Phe Leu Ser Ala Ala Ser Cys Val His Phe Leu
1 5 10 15

Leu Lys Val Ile Gly Phe Cys Leu Ser Ser Lys His Lys Asn Leu Lys
20 25 30

Gly Val Leu Gln Ile Phe Cys Ala Xaa Arg Trp Leu Phe Pro Ser Gly
35 40 45

Ser Xaa Phe Leu Asn Asn Asn
50 55

<210> 1506
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1506
Ile Cys Ile Val Pro Pro Pro Val Ser Leu Ile Arg Met Thr Cys Ala
1 5 10 15

Ile Phe Gln Arg Thr Cys Arg Gln Ala Gly Ile Leu Asp Tyr Phe Ser
20 25 30

Tyr Ser Glu Thr Trp Pro Val Trp Glu Cys Gly Ile Gln Arg Trp Ser
35 40 45

His Arg Cys Pro Tyr Cys Lys Trp Gln Phe
50 55

<210> 1507
<211> 49

<212> PRT
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<400> 1507
Leu Thr Xaa Ile Xaa Tyr Tyr Arg Xaa Ser Trp Tyr Ala Cys Arg Tyr
1   5   10   15

Arg Ser Gly Ile Xaa Gly Ser Thr His Ala Ser Ala Asp Ala Xaa Val
            20   25   30

Gly Gly Gln Gly Lys Val Tyr Ser Lys Ser Xaa Lys Pro Cys Gln Leu
        35   40   45

Lys

<210> 1508
<211> 120
<212> PRT

<213> Homo sapiens

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<400> 1508
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Val Pro Leu Pro Pro Ser Leu Arg Ser Pro Gly Ser His Arg Arg His
  1               5                  10                  15

His Ala Ser Gly Lys Pro Gln Arg Gly Leu Pro Ala Ser Gln Pro Pro
             20                  25                  30

Arg Arg Ala Leu Cys Pro Pro Ala Arg Ala Pro Thr Ala Leu Gly Ser
         35                  40                  45

Arg Pro Ser Pro Arg Pro Phe Gly Pro Xaa Gly Ala His Gly Ser Asp
     50                  55                  60

Gly Asp His Gly Arg Arg Gly Ser Arg Gly Leu Gly Cys Gly Thr Arg
 65                  70                  75                  80

His Gly Gln Arg Pro Asp Arg Ser Leu Gln Arg Gly Glu Leu Gly Ala
                 85                  90                  95
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Leu Pro Ala Cys Cys Pro Xaa Gly Xaa His Pro Arg Xaa Pro Xaa Ala
100 105 110

Pro Ala Xaa Gly Ala Leu Arg Leu
115 120

<210> 1509
<211> 100
<212> PRT
<213> Homo sapiens

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<400> 1509
Val Ser Ile Val Ala Ala Gln Met Phe Leu Phe Phe Xaa Val Xaa Leu
1 5 10 15

Xaa Xaa Ile Ser Pro Xaa His Leu Thr Ser Leu Trp Xaa Ile Met Val
20 25 30

Ser Glu Leu Ile Xaa Thr Phe Thr Gln Leu Glu Glu Asn Leu Lys Asp
35 40 45

Glu Xaa Xaa Ser Leu Xaa Xaa Thr Xaa Lys Val Asn Arg Ile Xaa Val
50 55 60

Ser Val Pro Asp Ala Asn Gly Pro Ser Val Gly Glu Xaa Pro Xaa Ser
65 70 75 80

Glu Leu Ile Leu Tyr Leu Ser Ala Xaa Lys Phe Leu Asp Thr Ala Ala
85 90 95

Phe Phe Xaa Thr
100

<210> 1510
<211> 48
<212> PRT
<213> Homo sapiens

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<400> 1510
Gly Lys Ser Lys Phe Trp Val Glu Val Leu Xaa Ser Met Ser Phe Leu
1 5 10 15

Leu Phe Leu Phe Tyr Leu Lys Xaa Leu Ile Tyr Pro Glu Trp Gln Xaa
20 25 30

Leu Xaa Gln Ala Asp Gly His Asn Leu Xaa Ser Lys Xaa Phe Phe Ile
35 40 45

<210> 1511
<211> 33
<212> PRT
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<400> 1511
Val Arg Xaa Ser Phe Leu Cys Thr Val Phe Leu Arg Arg Met Xaa Leu
1 5 10 15

Asp Ser Cys Leu Leu Ser Cys Ser Pro Ser Leu Ile Met Glu Leu Ser
20 25 30

Xaa

<210> 1512
<211> 61
<212> PRT
<213> Homo sapiens

<400> 1512
Lys Leu Val Pro Leu Gln Val Pro Val Arg Asn Ser Arg Ala Lys Tyr
1 5 10 15

Glu Asn Lys Ser Phe Glu Lys Asn Thr Val Cys Lys Ile Cys Ser Phe
20 25 30

Val Glu Val Met Val Leu Cys Phe Tyr Lys Ile Val Pro Thr Pro Phe
35 40 45

Phe Tyr Phe Arg Tyr Phe Ile Ser Thr Ile Ser Ile Asn
50 55 60

<210> 1513
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Ile Pro Gly Ser Thr His Ala Ser Val Xaa Leu Arg Cys Gly Ala Pro
20 25 30

Thr Ala Asp Xaa Ala Ala Gly Pro Xaa Arg Ser Ala Ala Xaa Arg Ser
35 40 45

Gln Glu Ala Gly Thr Ser Trp Lys Xaa Arg Pro Ala Arg
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<210> 1514
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Pro Arg Xaa Arg Ala Arg Arg Ala Glu Asp Gly Ile Gly Leu Asp Leu
1 5 10 15

Pro Leu Tyr Pro Ala His Pro Gln Asp Phe His Glu Val Glu Asp Leu
20 25 30

Ile Lys Thr Ala Ile Gly Asn Thr Leu Val Gln Asp Ile
35 40 45

<210> 1515
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<400> 1515
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1 5 10 15

Phe Phe Phe Phe Phe Ser Phe Ile Leu Leu Phe Ile Phe Pro Xaa Tyr
20 25 30

Xaa Asn Xaa Gln Gln Leu Xaa
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<210> 1516
<211> 66
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Thr Leu Xaa Gly Leu Pro His Gln Xaa Gln His Xaa Asp Arg Pro Gln
1 5 10 15

Ser Cys Thr Phe Ala Pro Lys Leu Leu Phe Thr Xaa Pro Phe Asn Leu
20 25 30

Xaa Ala Ala Thr Thr Ser Gln Gly Arg His Arg Glu Gly Glu Xaa Arg
35 40 45

Lys Lys Ser Xaa Ser Leu Leu Ser Ser Lys Thr Thr Thr Asn Tyr Thr
50 55 60

Gly Phe
65

<210> 1517
<211> 75
<212> PRT
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<400> 1517
Arg Thr Arg His Glu Lys Xaa Gly Asp Lys Ser Arg Ile Asn Thr Gly
1 5 10 15

Cys Ser Gln Phe Cys Leu Leu Lys Lys Lys Lys Lys Lys Lys Lys Lys
20 25 30

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
35 40 45

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
50 55 60

Lys Lys Lys Lys Gly Gly Pro Val Xaa Xaa Xaa
65 70 75

<210> 1518
<211> 84
<212> PRT
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<400> 1518

Ser Trp Tyr Ala Cys Arg Tyr Arg Ser Gly Ile Pro Gly Ser Thr Xaa
1   5   10   15

Ala Ser Xaa Lys Xaa Lys Gly Leu Gln Lys His Ser Phe Leu Cys Cys
            20   25   30

Ser Leu Leu Gly Phe Met Gln Arg Gln Phe Cys Val Asn Val Gln Leu
        35   40   45

Thr Leu Ile Trp Lys Tyr Glu Asn Gln Ser Ile Leu Val Ile Lys Asn
    50   55   60

Phe Phe Thr Ile Val Ile Ile Leu Met Phe Ile Leu Cys Lys Ile Thr
65   70   75   80

His Leu Ile Lys

<210> 1519
<211> 52
<212> PRT
<213> Homo sapiens

<400> 1519

Phe Gln Leu Ser Pro Gly Thr Pro Lys Pro Leu Pro Leu Gly Leu Pro
1   5   10   15

Ser Gln Pro Val Pro Arg Thr Ser Ser Ser Pro Phe Gln Ile Ile Lys
            20   25   30

Ser Met Asp Arg Ala Val Ser Glu Val Leu Thr Gln Gly Lys Lys Lys
        35   40   45

Lys Lys Lys Lys
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<210> 1520
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<212> PRT
<213> Homo sapiens

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<400> 1520
Ile Asn Ile Cys Ser Phe Gln Lys Lys Lys Lys Lys Lys Lys Lys Lys
1 5 10 15

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Xaa
20 25 30

Gly Gly Arg Phe Lys Gly Xaa Lys Xaa Thr Tyr Xaa Xaa
35 40 45

<210> 1521
<211> 71
<212> PRT
<213> Homo sapiens

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<400> 1521
Xaa Thr His Leu Arg Ser Asp Trp Thr Arg Xaa Ile Ile Leu Arg Ile
1 5 10 15

Ala Asn Xaa Ser Leu Gly Leu Xaa Leu Xaa Val Asp Phe Ser Met Leu

20 25 30

Arg Xaa Xaa Pro Xaa Arg Leu Glu Leu Xaa Leu Asp Asp Xaa Glu Glu
35 40 45

Phe Glu Asn Ile Xaa Lys Asp Leu Glu Thr Arg Lys Lys Gln Lys Glu
50 55 60

Asp Val Glu Val Val Xaa Gly
65 70

<210> 1522
<211> 41
<212> PRT
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<400> 1522
Ser Glu Lys Val Lys Thr Ala Phe Thr Lys Pro Gly Arg Trp Gly Leu
1 5 10 15

Cys Glu Pro Leu Cys Thr Gly Ser Leu Arg Asp Ser Ala Trp Cys Ser
20 25 30

Arg Xaa Ile Leu Ala Xaa Val Gly Glu
35 40

<210> 1523
<211> 58
<212> PRT
<213> Homo sapiens

<220>
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<400> 1523
Gly His Ala Leu Leu His Leu Lys Asn Lys Leu Cys Ser Asn Cys His
1 5 10 15

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
20 25 30

Asn Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys
35 40 45

Lys Lys Lys Xaa Gly Gly Xaa Phe Lys Xaa
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<210> 1524
<211> 24
<212> PRT
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<400> 1524
Pro Val Leu Thr His Gly Met Pro Pro Ala Ile Arg Pro Xaa Xaa Ser
1 5 10 15

Ser Trp Ser Ser Ser Thr Xaa Thr
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<210> 1525
<211> 35
<212> PRT
<213> Homo sapiens

<220>
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<400> 1525
Ser Lys Ser Arg Glu Leu Pro Leu Leu Leu Val Thr Cys Pro Leu Leu
1 5 10 15

Ser Ser Phe Cys Ser Gly Lys Pro Trp Asp Ser Ala Xaa Thr Tyr His
20 25 30

Cys Arg Cys
35

<210> 1526
<211> 33
<212> PRT
<213> Homo sapiens

<400> 1526
Ser Leu Ala Lys His Leu Asn His Leu Ser Ile Leu Ser Trp Phe Ile
1 5 10 15

Ile Ile Lys Ala Gln Asn Asn Leu Leu Leu Glu Asn Met Cys Phe Tyr
20 25 30

Lys

<210> 1527
<211> 85
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Xaa Gly Xaa Gly Glu Thr Gln Gly Xaa Ala Met Gly Cys Met Val Ala
1 5 10 15

Ser Gly Leu Leu Thr Gly Leu Ala Glu Val Leu Xaa Xaa Leu Xaa Xaa
20 25 30

Thr Xaa Gln Xaa Gly Xaa Xaa Gln Tyr Xaa Xaa Phe Arg Val Xaa Leu
35 40 45

Glu Ser Met Xaa Xaa Leu Xaa Asp Leu Glu Ala Xaa Trp Ala Pro Ser
50 55 60

Pro Xaa Leu Glu Ala Xaa Xaa Leu Leu Ala Ala Val Cys His His Pro
65 70 75 80

Ala Leu Xaa Leu Arg
85

<210> 1528
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1528
Ile Cys Pro Gln Asn Pro Leu Asn Pro Leu Val Asn Leu Thr Val Ser
1 5 10 15

Pro Lys Arg Asn Ser Ser Leu Asp Thr Arg Lys Lys Pro Cys Arg Glu
20 25 30

Ser Lys Lys Phe Asn Thr His Ser Arg Pro Lys Ser Ser His Gln Leu
35 40 45

Arg Lys Arg Ser Ser Ser Thr Pro Thr Thr
50 55

<210> 1529
<211> 90
<212> PRT
<213> Homo sapiens

<400> 1529
Cys Phe Ser Leu Cys Met Gly Gly Thr Ser Ala Val Ser Glu Ser Thr

1 5 10 15

Thr Ile Ser Ser Gly Ala Gly Pro Ser Ala Arg Pro Gln Lys Asn Arg
20 25 30

Arg Pro Gln Glu Ser Cys Arg Thr Gly Gly Leu Phe Leu Leu Ser Arg
35 40 45

Glu Ala Gln Gly Met Leu Trp Arg Asp Phe Thr Cys His His Phe Gln
50 55 60

Val Asn Arg Thr Arg Ala Leu Met Val Phe Lys Pro Cys Trp Lys Lys
65 70 75 80

Val Pro Met Val Ser Leu Val Leu Pro Val
85 90

<210> 1530
<211> 62
<212> PRT
<213> Homo sapiens

<400> 1530
Ala Asn Leu Gln Pro Lys Asn Leu Phe Lys Arg His Leu Trp Ser Cys
1 5 10 15

Asp Glu Thr Ser Ser Lys Thr His Ser Lys Thr Pro Leu Pro Pro Val
20 25 30

Gly His Gln Ser Ala Thr Lys His Glu Gln Ile Leu Leu Leu Ile Gly
35 40 45

Phe Pro Cys Asp Leu Val Pro Glu Val Phe Gly Ser Val Gln
50 55 60

<210> 1531
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<212> PRT
<213> Homo sapiens

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1 5 10 15

Phe Ile Xaa Leu Gln Ser Leu Arg Ile His Xaa Xaa Lys Xaa His
20 25 30

<210> 1532
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<400> 1532

Ala Val Ser Ala Val Gln Tyr Ser Thr Asp Arg Trp Thr Gln Xaa Xaa
1 5 10 15

Xaa His Xaa Gly Asn Arg His Leu Ser Ser
20 25

<210> 1533
<211> 55
<212> PRT
<213> Homo sapiens

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<400> 1533
His Xaa Ser Val Gln Leu Arg Thr Val Xaa Xaa Pro Ala Xaa Val Asn
1 5 10 15

Glu Pro Val Pro Xaa Xaa Ser Xaa Ser Lys Pro Pro Met Ser Ile Ser
20 25 30

Phe Xaa Ala His Leu Asn Thr Cys Xaa Tyr Ile Leu Tyr Ser Xaa Gln
35 40 45

Asn Asn Leu Tyr Leu Ile Xaa
50 55

<210> 1534
<211> 48
<212> PRT
<213> Homo sapiens

<220>
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<400> 1534

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Gly Thr Leu Val Leu Asn Gln Xaa Ser Xaa Ser Leu Phe Met Tyr Cys
  1               5                  10                  15

Phe Thr Xaa Phe Tyr Ser Tyr Val Lys Phe Trp Ile Asn Xaa Xaa Xaa
             20                  25                  30

Cys Asn Tyr Lys Leu Arg Pro Val Xaa Leu Phe Leu Lys Ala Pro Tyr
         35                  40                  45
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<210> 1535
<211> 53
<212> PRT
<213> Homo sapiens

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<400> 1535
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Met Gly Pro Leu Ser Ala Xaa Xaa Cys Arg Leu His Val Pro Trp Lys
 1               5                  10                  15

Glu Val Leu Leu Thr Ala Leu Leu Val Xaa Xaa Trp Asn Pro Pro Thr
            20                  25                  30

Thr Ala Lys Leu Thr Ile Glu Ser Xaa Pro Phe Xaa Val Ala Xaa Gly
        35                  40                  45

Lys Glu Val Leu Leu
    50
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<210> 1536
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<213> Homo sapiens

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<400> 1536
Xaa Ile Ile Asn Thr Leu Leu Ala Leu Leu Leu Ile Ile Ile Thr Phe
1 5 10 15

Xaa Leu Pro Gln Leu Asn Gly Tyr Ile Glu Lys Ser Thr Pro Tyr Glu
20 25 30

Cys Gly Phe Asp Pro Ile Ser Pro Ala Arg Val Pro Phe Ser Ile Lys
35 40 45

Phe Phe Leu Val Ala Ile Thr Phe Leu Leu Phe Asp Leu Glu Ile Ala
50 55 60

Leu Leu Leu Pro Leu Pro
65 70

<210> 1537
<211> 53
<212> PRT
<213> Homo sapiens

<400> 1537
Leu Pro Gln Leu Asn Gly Tyr Ile Glu Lys Ser Thr Pro Tyr Glu Cys
1 5 10 15

Gly Phe Asp Pro Ile Ser Pro Ala Arg Val Pro Phe Ser Ile Lys Phe
20 25 30

Phe Leu Val Ala Ile Thr Phe Leu Leu Phe Asp Leu Glu Ile Ala Leu
35 40 45

Leu Leu Pro Leu Pro
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<210> 1538
<211> 53
<212> PRT
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<400> 1538
Leu Pro Gln Leu Asn Gly Tyr Ile Lys Lys Ser Thr Pro Tyr Xaa Cys
1 5 10 15

Gly Phe Asp Pro Ile Ser Pro Ala Arg Val Pro Phe Ser Ile Lys Phe
20 25 30

Phe Leu Val Xaa Ile Thr Phe Leu Leu Phe Asp Leu Lys Ile Ala Leu
35 40 45

Leu Leu Pro Leu Pro
50

<210> 1539
<211> 53
<212> PRT
<213> Homo sapiens

<400> 1539
Leu Pro Gln Leu Asn Gly Tyr Ile Glu Lys Ser Thr Pro Tyr Glu Cys
1 5 10 15

Gly Phe Asp Pro Ile Ser Pro Ala Arg Val Pro Phe Ser Ile Lys Phe
20 25 30

Phe Leu Val Ala Ile Thr Phe Leu Leu Phe Asp Leu Glu Ile Ala Leu
35 40 45

Leu Leu Pro Leu Pro
50

<210> 1540
<211> 57
<212> PRT
<213> Homo sapiens

<400> 1540
Val Cys Phe Lys Gly Leu Tyr Leu Thr Asn Gly Phe Pro Leu Thr Glu
1 5 10 15

Leu Val Phe Ile Ser Asp Leu Thr Pro Leu Leu Asn Gly Ser Ser Gln
20 25 30

Asp Arg Met Phe Val Thr Thr Val Leu Glu Ile Glu Gln Leu Leu Ala
35 40 45

Arg Val Gly Val Leu Lys Asp Ser Ile
50 55

<210> 1541
<211> 137
<212> PRT
<213> Homo sapiens

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<222> (87)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1541
Trp Ile Pro Arg Ala Ala Gly Ile Arg His Glu Gly Ser Ser Asp Trp
1 5 10 15

Ser Tyr Gly Leu Glu Lys Gly Ser Leu Gly Met Pro Ser Glu Val Gly
20 25 30

Asp Arg Ala Gly Ala Gln Ala Pro Val Arg Asn Gly Arg Tyr Leu Ala
35 40 45

Ser Cys Gly Ile Leu Met Ser Arg Thr Leu Pro Leu His Thr Ser Ile
50 55 60

Leu Pro Lys Glu Ile Cys Ala Arg Thr Phe Phe Lys Ile Thr Ala Pro
65 70 75 80

Leu Ile Asn Lys Arg Lys Xaa Tyr Ser Glu Arg Arg Ile Leu Gly Tyr
85 90 95

Ser Met Gln Glu Met Tyr Asp Val Val Ser Gly Val Glu Asp Tyr Lys
100 105 110

His Phe Val Pro Trp Cys Lys Lys Ser Asp Val Ile Ser Lys Arg Ser
115 120 125

Gly Tyr Cys Lys Thr Arg Leu Glu Ile
130 135

<210> 1542
<211> 122
<212> PRT
<213> Homo sapiens

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<222> (46)
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<400> 1542
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1   5   10   15

Glu Ala Lys Gly Asn Glu Val Arg Pro Ser Gly Arg Val Phe Leu Ser
            20   25   30

Ser Ala Ala Leu Arg Leu Thr Cys Thr Phe Ser Ser Gly Xaa Gly Pro
        35   40   45

Ser Cys Gln Pro Phe Gln Asn Ile Phe Pro Trp Ile Leu Arg Tyr Leu
    50   55   60

Thr Phe Gln Asp Ser Arg Val Leu Ile Ile Xaa Leu Gly Asn Phe Trp
65   70   75   80

Xaa Xaa Trp Thr Gln Ser Xaa Phe Leu Lys Phe Xaa Pro Gln Gly Leu
                85   90   95

Pro Ala Leu Gly Gly Ser Lys Val Phe Pro Lys Gly Pro Xaa Xaa Pro
            100   105   110

Ala Pro Phe Phe Lys Xaa Arg Ile Xaa Ser
        115   120

<210> 1543
<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (48)
<223> Xaa equals any of the naturally occurring L-amino acids

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<222> (55)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (57)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1543
Tyr Pro Ala Ser Gln Ile Val His His Phe Met Glu Leu Cys Trp Asp
1 5 10 15

Lys Cys Val Glu Lys Pro Gly Asn Arg Leu Asp Ser Arg Thr Glu Asn
20 25 30

Cys Leu Ser Ser Cys Val Asp Arg Phe Ile Asp Thr Thr Leu Ala Xaa
35 40 45

Thr Gln Ser Val Cys Pro Xaa Leu Xaa
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<210> 1544
<211> 63
<212> PRT
<213> Homo sapiens

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<222> (5)
<223> Xaa equals any of the naturally occurring L-amino acids

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Gly Gly Ile Ala Xaa Ala Gly Ser Gly His Met Asn Tyr Ile Gln Val
1 5 10 15

Thr Pro Gln Glu Lys Xaa Ala Ile Glu Arg Leu Lys Ala Leu Gly Phe
20 25 30

Pro Glu Gly Leu Val Ile Gln Ala Tyr Phe Ala Cys Glu Lys Asn Glu
35 40 45

Asn Leu Ala Ala Asn Phe Leu Leu Gln Gln Asn Phe Asp Glu Asp
50 55 60

<210> 1545
<211> 124
<212> PRT
<213> Homo sapiens

<220>
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<222> (99)
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1545
Glu Gly Leu Thr Pro Gln Glu Ile Cys Asp Lys Tyr His Ile Ile Gln
1   5   10   15

Ser Leu Gly Leu Cys Cys Cys Thr Ile Leu Ile Cys Pro Thr Gln Ile
            20   25   30

Glu Gly Val Pro Leu Ala Glu Gly Leu Thr Pro Gln Glu Ile Cys Asp
        35   40   45

Lys Tyr His Ile Ile His Ala Asp Ile Tyr Arg Trp Phe Asn Ile Ser
    50   55   60

Phe Asp Ile Phe Gly Arg Thr Thr Thr Pro Gln Gln Thr Lys Ile Thr
65   70   75   80

Gln Asp Ile Phe Gln Gln Leu Leu Lys Arg Ser Phe Val Leu Gln Asp
                85   90   95

Thr Val Xaa Gln Leu Arg Cys Glu His Cys Ala Arg Phe Leu Ala Asp
            100   105   110

Arg Phe Arg Gly Arg Arg Val Ser Leu Leu Trp Leu
        115   120

<210> 1546
<211> 184
<212> PRT
<213> Homo sapiens

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<222> (1)
<223> Xaa equals any of the naturally occurring L-amino acids

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<221> SITE
<222> (167)
<223> Xaa equals any of the naturally occurring L-amino acids

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1   5   10   15

Lys His Asp Ala Asp Ser Phe Tyr Gln Phe Ser Cys Asn Ile Cys Gly
20 25 30

Lys Lys Phe Glu Lys Lys Asp Ser Val Val Ala His Lys Ala Lys Ser
35 40 45

His Pro Glu Val Leu Ile Ala Glu Ala Leu Ala Ala Asn Ala Gly Ala
50 55 60

Leu Ile Thr Ser Thr Asp Ile Leu Gly Thr Asn Pro Glu Ser Leu Thr
65 70 75 80

Gln Pro Ser Asp Gly Gln Gly Leu Pro Leu Leu Pro Glu Pro Leu Gly
85 90 95

Asn Ser Thr Ser Gly Glu Cys Leu Leu Leu Glu Ala Glu Gly Met Ser
100 105 110

Lys Ser Tyr Cys Ser Gly Thr Glu Arg Val Ser Leu Met Ala Asp Gly
115 120 125

Lys Ile Phe Val Gly Ser Gly Ser Ser Gly Gly Thr Glu Gly Leu Val
130 135 140

Met Asn Ser Asp Ile Leu Gly Ala Thr Thr Glu Val Leu Ile Glu Asp
145 150 155 160

Ser Asp Ser Ala Gly Pro Xaa Trp Thr Gly Arg Leu Gly Ala Trp Asp
165 170 175

Ser Ser Asp Phe Val Phe Lys Ser
180

<210> 1547
<211> 733
<212> DNA
<213> Homo sapiens

<400> 1547
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aattcgaggg tgcaccgtca gtcttcctct tccccccaaa acccaaggac accctcatga 120
tctcccggac tcctgaggtc acatgcgtgg tggtggacgt aagccacgaa gaccctgagg 180
tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg 240
aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg caccaggact 300
ggctgaatgg caaggagtac aagtgcaagg tctccaacaa agccctccca acccccatcg 360
agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac accctgcccc 420
catcccggga tgagctgacc aagaaccagg tcagcctgac ctgcctggtc aaaggcttct 480
atccaagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac aactacaaga 540

ccacgcctcc cgtgctggac tccgacggct ccttcttcct ctacagcaag ctcaccgtgg 600
acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat gaggctctgc 660
acaaccacta cacgcagaag agcctctccc tgtctccggg taaatgagtg cgacggccgc 720
gactctagag gat 733

<210> 1548
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<212> PRT
<213> Homo sapiens

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<400> 1548
Trp Ser Xaa Trp Ser
1 5

<210> 1549
<211> 86
<212> DNA
<213> Homo sapiens

<400> 1549
gcgcctcgag atttccccga aatctagatt tccccgaaat gatttccccg aaatgatttc 60
cccgaaatat ctgccatctc aattag 86

<210> 1550
<211> 27
<212> DNA
<213> Homo sapiens

<400> 1550
gcggcaagct ttttgcaaag cctaggc 27

<210> 1551
<211> 271
<212> DNA
<213> Homo sapiens

<400> 1551
ctcgagattt ccccgaaatc tagatttccc cgaaatgatt tccccgaaat gatttccccg 60
aaatatctgc catctcaatt agtcagcaac catagtcccg cccctaactc cgcccatccc 120
gcccctaact ccgcccagtt ccgcccattc tccgccccat ggctgactaa ttttttttat 180

ttatgcagag gccgaggccg cctcggcctc tgagctattc cagaagtagt gaggaggctt 240
ttttggaggc ctaggctttt gcaaaaagct t 271

<210> 1552
<211> 32
<212> DNA
<213> Homo sapiens

<400> 1552
gcgctcgagg gatgacagcg atagaacccc gg 32

<210> 1553
<211> 31
<212> DNA
<213> Homo sapiens

<400> 1553
gcgaagcttc gcgactcccc ggatccgcct c 31

<210> 1554
<211> 12
<212> DNA
<213> Homo sapiens

<400> 1554
ggggactttc cc 12

<210> 1555
<211> 73
<212> DNA
<213> Homo sapiens

<400> 1555
gcggcctcga ggggactttc ccggggactt tccggggact ttccgggact ttccatcctg 60
ccatctcaat tag 73

<210> 1556
<211> 256
<212> DNA
<213> Homo sapiens

<400> 1556
ctcgagggga ctttcccggg gactttccgg ggactttccg ggactttcca tctgccatct 60
caattagtca gcaaccatag tcccgcccct aactccgccc atcccgcccc taactccgcc 120
cagttccgcc cattctccgc cccatggctg actaattttt tttatttatg cagaggccga 180
ggccgcctcg gcctctgagc tattccagaa gtagtgagga ggcttttttg gaggcctagg 240

cttttgcaaa aagctt 256

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/05883

A. CLASSIFICATION OF SUBJECT MATTER
IPC(6) : C12P 21/04; C12N 15/00; C07H 21/02
US CL : 435/70.1, 320.1; 536/23.1
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 435/70.1, 320.1; 536/23.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	SCANLAN et al. Characterization of Human Colon Cancer Antigens Recognized by Autologous Antibodies, Int. J. Cancer, 1998, Vol. 76, pages 652-658.	1-4, 11-12, 16 --- 5-10, 14-15
X --- Y	TANAKA et al. A Novel Variant of Human Grb7 Is Associated with Invasive Esophageal Carcinoma, J. Clin. Invest., August 1998, Vol. 102, No. 4, pages 821-827.	1-4, 11-12, 16 --- 5-10, 14-15
X --- Y	KISHI et al. Molecular Cloning of Human GRB-7 Co-amplified with CAB1 and c-ERBB-2 in Primary Gastric Cancer, Biochemical and Biophysical Research Communications, 1997, Vol. 232, pages 5-9.	1-4, 11-12, 16 --- 5-10, 14-15
X --- Y	JIANG et al. Subtraction hybridization identifies a novel melanoma differentiation associated gene, mda-7, modulated during human melanoma differentiation, growth and progression, Oncogenes, 1995, Vol. 11, pages 2477-2486.	1-4, 11-12, 16 --- 5-10, 14-15
X --- Y	MUELLER et al. Polymerase Chain Reaction Selects a Novel Disintegrin Proteinase from CD40-Activated Germinal Center Dendritic Cells, J. Exp. Med., August 1997, Vol. 186, No. 5, pages 655-663.	1-4, 11-12, 16 --- 5-10, 14-15

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search 18 May 2000 (18.05.2000)	Date of mailing of the international search report 13 JUN 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Young J. Kim Jerry J. Dey for Telephone No. (703) 308-0196

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/05883

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	FOJO et al. Donor Splice Site Mutation in the Apolipoprotein (Apo) C-II Gene (APO C-IIhamburg) of a Patient with APO C-II Deficiency, The Journal of Clinical Investigations, November 1988, Vol. 82, pages 1489-1494.	1-4, 11-12, 16 --- 5-10, 14-15
X --- Y	JACKSON et al. Isolation of cDNA and Genomic Clones for Apolipoprotein C-II, Methods in Enzymology, 1986, Vol. 128, pages 788-800.	1-4, 11-12, 16 --- 5-10, 14-15
X --- Y	HILLIER et al. Generation and Analysis of 280,000 Human Expressed Sequence Tags, Genome Research, 1996, Vol. 6, No. 9, pages 807-828.	1-4, 11-12, 16 --- 5-10, 14-15
Y	WATSON et al. The Science Used in the Recombinant DNA Industry. In: Recombinant DNA, W.H. Freeman and Company, 1983, pages 231-241.	7-10, 14-15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/05883

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-12,14,15,16,21

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-12, 14, 15, 16, and 21, drawn to cDNA, polypeptides, genes, a method of using the cDNA to make host cells comprising the cDNA, and a method of making the polypeptide.

Group II, claim(s) 13, drawn to an antibody specific for the polypeptides of Group I.

Group III, claim(s) 17, drawn to a therapeutic method of using the cDNA or the polypeptide of Group I.

Group IV, claim(s) 18 and 19, drawn to a diagnostic method of using the cDNA or polypeptide of Group I.

Group V, claim(s) 20, drawn to a method of using the polypeptide of Group I to isolate a binding partner.

Group VI, claim(s) 22, drawn to a method of using the cDNA of Group I to identify the activity of the polypeptide encoded by the cDNA.

Group VII, claim(s) 23, drawn to the binding partner made by the method of Group V.

The inventions listed as Groups I-VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: PCT Rule 13.1 and Annex B do not provide for unity of invention between two or more different products or methods of use that share a special technical feature.

In addition, each Group detailed above reads on distinct Groups drawn to multiple SEQ ID Numbers. The sequences are distinct because they are unrelated sequences, and a further lack of unity is applied to each Group. The lack of unity is partially waived and the Applicants must further elect 10 SEQ ID Numbers for examination in the elected Group detailed above.

Continuation of B. FIELDS SEARCHED Item 3: SEQUENCE DATABASES (US PATENT, INTERFERENCE, COMMERCIAL)
STN COMMERCIAL DATABASE (Biosis, Medline, Embase, Embal, SciSearch, BiotechDS, CaPlus)
Search Terms: Recombinant, Host, Cell, Vector, peptide, protein, cDNA